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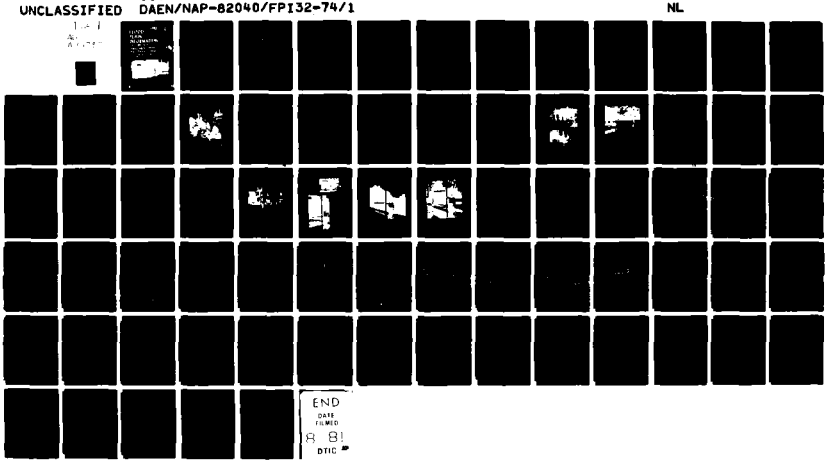

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FLOOD PLAIN INFORMATION

EAST BRANCH, PERKIOMEN CREEK AND INDIAN CREEK

BUCKS AND MONTGOMERY COUNTIES, PENNSYLVANIA

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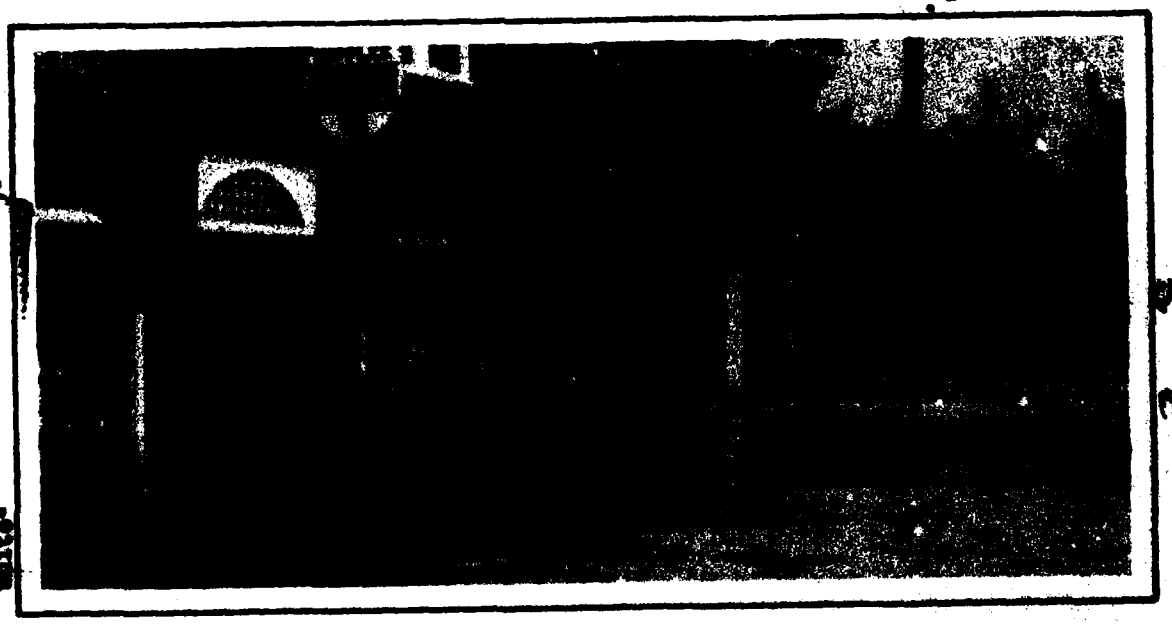

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REPT. NO: DAEN/NAP-82040/FPI32-74/10

OCTOBER 1974

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TO THE REQUESTOR:

This Flood Plain Information (FPI) Report was prepared by the Philadelphia District office of the U.S. Army Corps of Engineers, under the continuing authority of the 1960 Flood Control Act, as amended. The report contains valuable background information, discussion of flood characteristics and historical flood data for the study area. The report also presents through tables, profiles, maps and text, the results of engineering studies to determine the possible magnitude and extent of future floods, because knowledge of flood potential and flood hazards is important in land use planning and for management decisions concerning floodplain utilization. These projections of possible flood events and their frequency of occurrence were based on conditions in the study area at the time the report was prepared.

Since the publication of this FPI Report, other engineering studies or reports may have been published for the area. Among these are Flood Insurance Studies prepared by the Federal Insurance Administration of the Federal Emergency Management Agency, Flood Insurance Studies generally provide different types of flood hazard data (including information pertinent to setting flood insurance rates) and different types of floodplain mapping for regulatory purposes and in some cases provide updated technical data based on recent flood events or changes in the study area that may have occurred since the publication of this report.

It is strongly suggested that, where available, Flood Insurance Studies and other sources of flood hazard data be sought out for the additional, and, in some cases, updated flood plain information which they might provide. Should you have any questions concerning the preparation of, or data contained in this FPI Report, please contact:

U.S. Army Corps of Engineers
Philadelphia District
Custom House, 2nd and Chestnut Streets
Philadelphia, PA 19106

ATTN: Flood Plain Mgt. Services Branch, NAPEN-M

Telephone number: (215) 597-4807

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Flood forecasting
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20. ABSTRACT *(Continue on reverse side if necessary and identify by block number)*

The portions of Bucks and Montgomery Counties covered by this report were subject to flooding from East Branch Perkiomen Creek and Indian Creek. A history of flooding in the East Branch Perkiomen Valley was given. Maps, photographs, profiles and cross sections were also presented.

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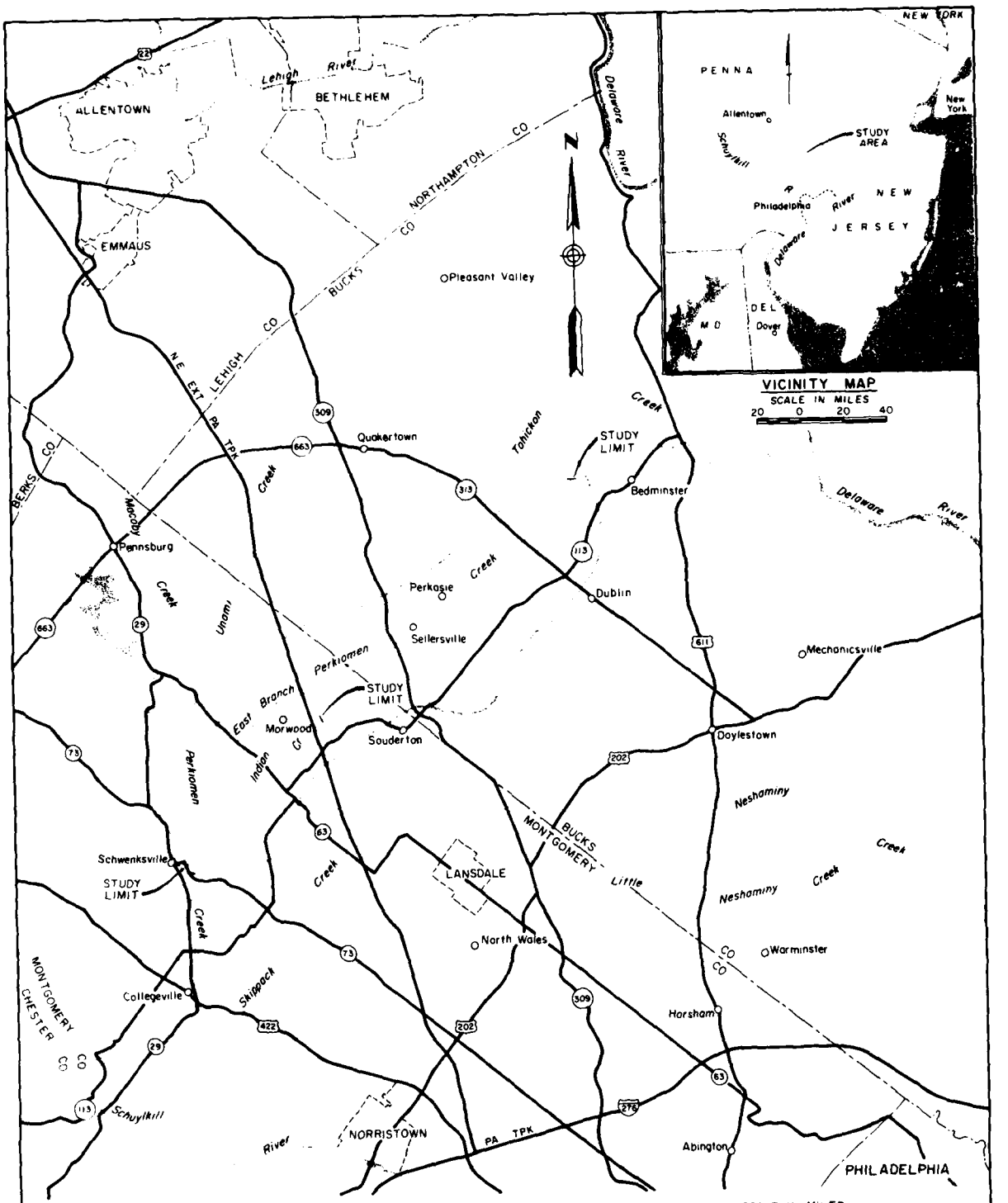
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Delaware River
NORTHAMPTON CO
BUCKS CO
EMMAUS
Pleasant Valley
N.E. EXT PA TPK
LEHIGH CO
BERKS CO
Macoby Creek
Pennsburg
Quakertown
Tohickon Creek
STUDY LIMIT
Bedminster
Delaware River
Perkasie Creek
Dublin
Unami Creek
Sellersville
Mechanicsville
Perkiomen
STUDY LIMIT
East Branch Perkiomen
Morwood
Souderton
Doylestown
Indian Creek
Neshaminy
BUCKS
MONTGOMERY
Schwenksville
STUDY LIMIT
LANSDALE
Little Neshaminy Creek
North Wales
Warminster
Skippack Creek
Collegeville
Horsham
MONTGOMERY CO
CHESTER CO
Schuylkill River
NORRISTOWN
PA TPK
Abington
PHILADELPHIA
NEW YORK
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PHILADELPHIA DISTRICT, CORPS OF ENGINEERS
PHILADELPHIA, PENNSYLVANIA
FLOOD PLAIN INFORMATION
EAST BRANCH PERKIOMEN CREEK
BUCKS & MONTGOMERY COUNTIES, PA.
GENERAL MAP

PLATE 1

PREFACE

The portions of Bucks and Montgomery Counties covered by this report are subject to flooding from East Branch Perkiomen Creek and Indian Creek. The properties on the flood plains along these streams are primarily rural with scattered residential and commercial developments, some of which have been severely damaged by past floods. The open spaces in the flood plains which may come under pressure for future development are extensive. Although large floods have occurred in the past, studies indicate that even larger floods are possible.

This report has been prepared because a knowledge of flood potential and flood hazards is important in land use planning and for management decisions concerning flood plain utilization. It includes a history of flooding in the East Branch Perkiomen Valley and identifies those areas that are subject to possible future floods. Special emphasis is given to these floods through maps, photographs, profiles, and cross sections. The report does not provide solutions to flood problems; however, it does furnish a suitable basis for the adoption of land use controls to guide flood plain development and thereby prevent intensification of the loss problems. It will also aid in the identification of other flood damage reduction techniques such as works to modify flooding and adjustments including flood proofing which might be embodied in an overall Flood Plain Management (FPM) program. Other FPM program studies—those of environmental attributes and the current and future land use role of the flood plain as part of its surroundings—would also profit from this information.

At the request of the Montgomery County Planning Commission and endorsement of the Pennsylvania Department of Environmental Resources, this report was prepared by the Philadelphia District Office of the Corps of Engineers, Department of the Army, under continuing authority provided in Section 206 of the 1960 Flood Control Act, as amended. In addition to that portion of the East Branch Perkiomen Creek within Montgomery County, this report also contains updated information on the East Branch Perkiomen Creek within Bucks County which had initially been studied at the request of the Bucks County Planning Commission and presented in a report dated January 1971.

Assistance and cooperation of the United States Geological Survey (USGS), Bucks County and Montgomery County Planning Commissions, and private citizens in supplying useful data and photographs for the preparation of this report are appreciated.

Additional copies of this report can be otbained from the Bucks County and Montgomery County Planning Commissions. The Philadelphia District Office of the Corps of Engineers, Department of the Army, will upon request, provide technical assistance to planning agencies in the interpretation and use of the data presented as well as planning guidance and further assistance, including the development of additional technical information.

BACKGROUND INFORMATION

Settlement

Early settlers in Bucks and Montgomery Counties were generally followers of William Penn and the Society of Friends. They were followed by the Welsh, Scotch, Irish and later the Germans who settled throughout Bucks and Montgomery Counties during the mid 1700's.

The rich soil of the East Branch Perkiomen Creek Valley was ideal for farming. However, the impact of small manufacturing increased development in the early seventeen hundreds when mills were built along the streams in the area.

The two communities of appreciable size located on the East Branch Perkiomen Creek are the Boroughs of Perkasie and Sellersville. Perkasie was incorporated in 1876 and grew rapidly to become the fastest growing community in Bucks County. Sellersville was incorporated in 1874 and has long been noted for its industries.

The East Branch Perkiomen Creek Valley area of Bucks and Montgomery Counties has had a farily consistent growth rate since its initial development. The population figures, Table 1, indicate that the area's greatest growth will occur during the 1970's and 1980's putting a great deal of pressure on development of the flood plain.

TABLE 1
POPULATION FIGURES (a)
Bucks and Montgomery Counties, Pennsylvania

County	1950	1960	1970
Bucks	144,620	308,567	415,056
Montgomery	353,068	515,122	623,921

(a) Source: Bureau of Census

The Stream and Its Valley

The East Branch Perkiomen Creek, with a total drainage area of approximately 61 square miles, is a principal tributary of the Perkiomen Creek. The headwaters of the East Branch are located in Bedminster Township, Bucks County, Pennsylvania. The stream flows southwesterly for about 24.2 miles to unite with the main stem of Perkiomen Creek just southeast of Schwenksville, Montgomery County, Pennsylvania.

Within the study area, the East Branch flows 11.26 miles through Bucks County and 12.91 miles through Montgomery County to its confluence with the main stem. Over the 24.17 mile study reach, East Branch Perkiomen Creek falls approximately 290 feet in elevation for an average of 12 feet per mile. The extreme upper portion of the streambed drops swiftly, as much as 49 feet per mile. The stream gradient then becomes more gentle above the Borough of Perkasie, Bucks County, Pennsylvania. The stream valley of the East Branch Perkiomen Creek varies greatly from wide gently rolling hills to areas where the side slopes are extremely steep. Due to the rural nature of the area, many of the overbanks are covered with brush and vegetation.

Indian Creek, with a total drainage area of approximately 7.0 square miles, is a main tributary of the East Branch Perkiomen Creek. The headwaters of Indian Creek are located in Franconia Township, Montgomery County, Pennsylvania. The stream flows southwesterly for about 3.9 miles to its confluence with the East Branch Perkiomen Creek in Lower Salford Township, Montgomery County. Within the study limits, the stream slope averages 30.5 feet per mile.

The climate of the area is characterized by warm summers when temperatures may rise above 85 degrees, and cool winters when temperatures fall below 20 degrees. Annual precipitation over the basin averages 42-47 inches and is fairly evenly distributed throughout the year. The study area covered by this report is shown on the general map and Table 2 lists drainage areas contributing to runoff at various locations.

TABLE 2
DRAINAGE AREAS
East Branch Perkiomen Creek and Indian Creek

Location	Mileage Above Mouth	Drainage Area	
		Tributary sq. mi.	Total sq. mi.
East Branch Perkiomen Creek			
Confluence with Perkiomen Creek	0.00	---	61.0
Wawa Camp Road	3.36	---	58.4
Downstream of confluence with Indian Creek	5.02	7.0	55.8
Camp Road	9.54	---	44.0
Dam No. 3	12.17	---	39.0
Montgomery-Bucks County Line	12.91	---	38.2
Downstream of confluence with Mill Creek	15.73	5.0	34.2
Main St. (Old U.S. Rte. 309)	16.23	---	28.8
Downstream of confluence with Pleasant Spring Creek	17.27	9.0	26.9
Callowhill Road	18.14	---	16.3
Downstream of confluence with Morris Run	20.42	7.2	13.6
Indian Creek			
Confluence with East Branch Perkiomen Creek	0.00	---	7.0
Pa. Route 63	0.92	---	5.9
Mill Road	2.19	---	3.6
Pa. Turnpike (Northeast Extension)	3.31	---	2.7
Allentown Road	3.81	---	1.9

Developments in the Flood Plain

The areas adjacent to the East Branch Perkiomen Creek, except within the Boroughs of Sellersville and Perkasie and the areas adjacent to Indian Creek are predominantly rural. The flood plains are generally used for agricultural purposes or are lightly wooded. Although a large portion of the flood plain areas lying within Sellersville and Perkasie in Bucks County have been developed for municipal park use (Lenape Park), there are residential, commercial and industrial developments in the remaining areas. The greatest concentration of this development is in the vicinity of Old U.S. Route 309 (Main Street) in Sellersville. Some of these facilities have suffered damage from past floods and a still

greater number are vulnerable to flooding by the potentially larger floods of the future. In addition to residential, commercial and industrial developments on the flood plains of East Branch Perkiomen Creek and Indian Creek, associated streets, roads and utilities may also be subject to flooding and subsequent damage. It is expected that the flood plains of East Branch Perkiomen Creek and Indian Creek will come under increasing pressure for development to meet the residential, commercial and industrial needs of an increasing population.

The eight dams on the East Branch Perkiomen Creek and the three dams on Indian Creek have very limited storage capacity and, therefore, will not significantly alter floodflows.

FLOOD SITUATION

Sources of Data and Records

The United States Geological Survey maintains a gaging station on the Perkiomen Creek at Graterford, Pennsylvania, which has been in continuous service since 1914. Although there are no gaging stations on either the East Branch Perkiomen or Indian Creeks, the information obtained from the gage at Graterford was valuable in evaluating the reliability of synthetic methods used for deriving discharge data on the studied streams. Crest stages and discharges for the greatest known floods at the gaging station on Perkiomen Creek at Graterford, Pennsylvania, are shown in Table 3. To supplement the records at the gaging station, newspaper files, historical documents and records were searched for information concerning floods which have occurred on East Branch Perkiomen and Indian Creeks.

Maps prepared for this report were based on U.S. Geological Survey Quadrangle Sheets entitled "Perkiomenville, Pennsylvania, 1969;" "Telford, Pennsylvania, 1969;" "Collegeville, Pennsylvania, 1966;" "Quakertown, Pennsylvania, 1968;" and "Bedminster, Pennsylvania, 1968." Stream and valley cross sections and structural data on bridges and culverts were obtained by field surveys performed by Corps of Engineers, Philadelphia District personnel.

Flood Season and Flood Characteristics

Major floods have occurred in the study reaches of East Branch Perkiomen Creek and Indian Creek during all seasons of the year with the greatest recorded flood occurring on the Perkiomen Creek in July 1935. Stages can rise from normal flow to flood peaks in relatively short periods of time with high velocities in the main channel of the streams. In addition to flooding caused by runoff from general rainfall, the East Branch Perkiomen Creek and Indian Creek Watersheds are susceptible to hurricane activity and floods from snowmelt in combination with rainfall. The lower reach of the East Branch Perkiomen Creek is also subject to flooding from the Perkiomen Creek. High stages on the main stem can create a "backwater" effect which literally backs-up floodwater on the East Branch.

TABLE 3
FLOOD CREST ELEVATIONS
Perkiomen Creek
U.S.G.S. Gaging Station No. 4730 at Graterford, Pennsylvania (a)

Date of Crest	Estimated Peak Discharge cfs	Stage (b) feet	Elevation (c) feet-mean sea level datum
July 9, 1935	39,900	18.3	131.0
June 22, 1972	35,800	17.1	129.8
August 23, 1933	34,600	16.7	129.4
June 2, 1946	31,700	16.2	128.9
August 9, 1942	30,200	15.5	128.2
November 25, 1950	26,100	14.6	127.3
September 14,1971	25,600	14.7	127.4
September 12, 1960	25,400	14.5	127.2
August 4, 1915	24,900	16.0	125.4 (d)
August 13, 1955	24,200	14.3	127.0
August 19, 1955	23,600	14.1	126.8
November 22, 1952	22,400	13.4	126.1
May 20, 1940	22,100	13.3	126.0
July 14, 1928	21,200	13.4	126.1

(a) Drainage area equals 279 square miles.
(b) Overbank flooding begins at a stage of 11 feet as per U.S.G.S.
(c) Feet, mean sea level datum. Gage datum is 112.66 feet above sea level datum, 1929 Adjustment.
(d) Prior to September 14, 1927, the gage was located 1,650 feet downstream of its present site. The datum was 3.29 feet lower, or elevation 109.37.

Factors Affecting Flooding and Its Impact

Obstructions to floodflows - Natural obstructions to floodflows include trees, brush and other vegetation growing along the stream banks in floodway areas. Man-made encroachments on or over the streams such as dams, bridges and culverts can also create more extensive flooding than would otherwise occur.

During floods, trees, brush and other vegetation growing in floodways impede floodflows, thus creating backwater and increased flood heights. Trees and other debris may be washed away and carried downstream to collect on bridges and other obstructions to flow. As floodflow increases, masses of debris break loose and a wall of water and debris surges downstream until another obstruction is encountered. Debris may collect against a bridge until the load exceeds its structural capacity and the bridge is destroyed. The limited capacity of obstructive bridges or culverts, debris plugs at the culvert mouth or a combination of these factors retard floodflows and result in flooding upstream, erosion around the culvert entrance and bridge approach embankments and possible damage to the overlying roadbed.

In general, obstructions restrict floodflows and result in overbank flows and unpredictable areas of flooding; destruction of or damage to bridges and culverts; and, an increased velocity of flow immediately downstream. It is impossible to predict the degree or location of the accumulation of debris; therefore, for the purposes of this report, it was necessary to assume that there would be no accumulation of debris to clog any of the bridge or culvert openings in the development of the flood profiles. A representative obstruction to floodflows is shown in Figure 1.

East Branch Perkiomen Creek and Indian Creek are spanned 43 times by bridges and culverts, many of which are obstructive to floodflows. Pertinent information on all bridges and culverts can be found in Table 5 on page 20. As previously stated, the eight dams on the East Branch Perkiomen Creek and the three dams on Indian Creek will not significantly alter floodflows.

Flood damage reduction measures - Although there are no flood control structures planned for the East Branch Perkiomen Creek or Indian Creek, many of the Boroughs and Townships in both Bucks and Montgomery Counties have adopted or are in the process of adopting flood plain zoning ordinances. Additionally, throughout some reaches of the stream, the East Branch Perkiomen Creek flows through municipally-owned park areas which have contained major floods, thereby reducing possible flood damages.

Other factors and their impacts - The impact of flooding along East Branch Perkiomen Creek and Indian Creek can be affected by the ability of local residents to anticipate and effectively react to a flood emergency. Efficient flood warning and forecasting systems can give homeowners, business and industry valuable time to remove damageable materials from low-lying areas. Increased damages to downstream areas can be reduced if floatable materials stored on the flood plain can be removed before being carried downstream to block bridge and culvert openings. Implementation of effective flood fighting and emergency evacuation plans can further reduce flood damages and the incidence of personal injury and death once the creeks have reached flood stage.

Flood warning and forecasting - The National Weather Service Branch of the National Oceanic and Atmospheric Administration (NOAA) maintains year-round surveillance of weather conditions in the study area with stations at Philadelphia, Pennsylvania, and Trenton, New Jersey. Flood warnings and predicted flood peaks are issued by the NOAA Flood Forecasting Centers at Harrisburg, Pennsylvania, and Trenton, New Jersey. In times of a flood emergency, the Bucks County and the Montgomery County Civil Defense Offices maintain communication with the State Civil Defense Headquarters and the National Weather Service in order to establish a "flood watch" during the earliest stages of a flood threat. Usual warnings are issued by these agencies to the inhabitants of the area through radio, television, and the local press media.

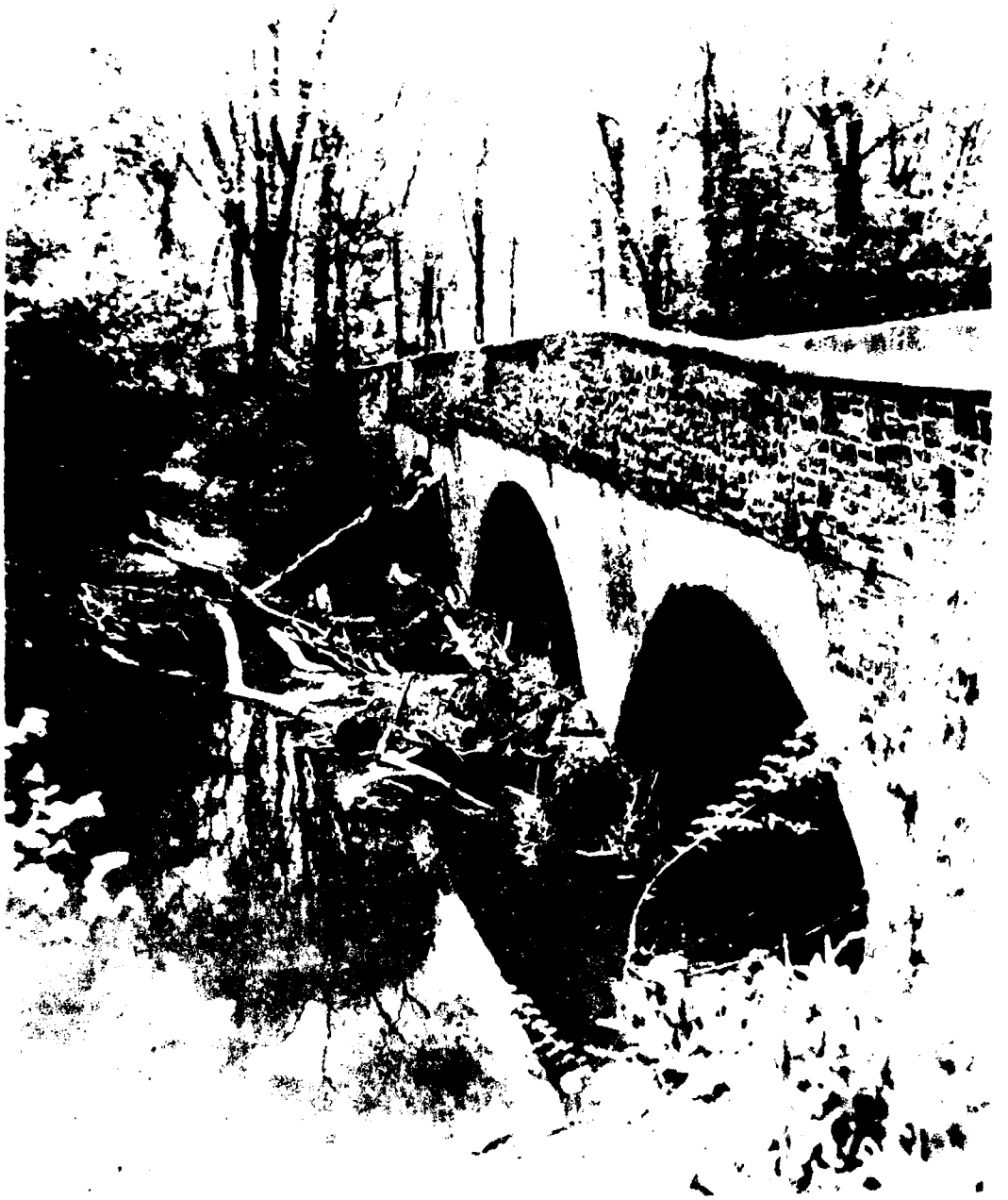


FIGURE 1 - Debris deposited at the Camp Road Bridge would be obstructive to floodflows.

Flood fighting and emergency evacuation plans - Although there are no formal flood fighting or emergency evacuation plans for East Branch Perkiomen Creek and Indian Creek Watersheds, provisions for alerting area residents through local communications media and coordinating operations for Bucks County and Montgomery County are accomplished through their County Civil Defense Offices. These Offices coordinate flood fighting, evacuation and rescue activities on a countywide basis with local agencies. Plans have been made by the counties to provide emergency mass care centers for residents that have been displaced from their homes by floodwaters.

Material storage on the flood plain - Large portions of the flood plains of East Branch Perkiomen Creek and Indian Creek are undeveloped at the present time, and therefore, there is no material storage on the flood plain. Also, in the areas of existing residential development, there is little or no material storage in the flood plains. In the future, however, as the flood plains of East Branch Perkiomen Creek and Indian Creek come under increasing pressure for development, increased quantities of buoyant materials may be stored on the flood plains. Floatable materials from residential, commercial and industrial development may be carried away by floodflows causing serious damage to structures downstream and clogging bridge and culvert openings creating more hazardous flooding problems.

PAST FLOODS

Summary of Historical Floods

Published accounts of damaging floods in the study area date back as early as August 9, 1942. Other floods causing significant damage occurred in 1946, 1960, 1972 and 1973. Although the East Branch Perkiomen Valley had been flooded earlier than 1942, only fragmentary information is available prior to that date. The largest recorded flood on the Perkiomen Creek at Graterford, Pennsylvania, occurred on July 9, 1935, and this might also be the flood of record on the East Branch Perkiomen Creek.

Flood Records

Since no gage records are available for East Branch Perkiomen Creek and Indian Creek, information on historical floods was obtained from stream gaging records at the U.S.G.S. Gage on the Perkiomen Creek at Graterford, Pennsylvania.

To supplement the records at the gaging station, newspaper files, historical documents and records were searched for information concerning past floods. These records have helped in developing a knowledge of floods which have occurred on East Branch Perkiomen Creek and Indian Creek. Crest stages for known floods at the gaging station on Perkiomen Creek at Graterford, Pennsylvania, are shown in Table 3 on Page 6.

Flood Descriptions

The following are descriptions of known large floods that have occurred in the study area:

July 9, 1935 - This flood was the largest recorded flood on the Perkiomen Creek at the Graterford Gaging Station. The crest rose 15.6 feet in 10 hours and the stream remained out of banks for over 13 hours. The flood was the result of unusually heavy rainfall concentrated over the Perkiomen Valley. This flood caused extensive damage in developed areas.

EXCERPTS FROM THE DOYLESTOWN DAILY INTELLIGENCER, JULY 10, 1935[a] RELATIVE TO THE FLOOD OF JULY 9, 1935

PENNSYLVANIA'S WORST FLOOD IN YEARS, BUCKS FORTUNATE

A rainfall of 6.56 inches in 36 hours was responsible for the flood in the Perkiomen Valley, reaching its highest flood stage since 1898. The Perkiomen Creek left widespread damage and thousands marooned and homeless in its wake.

The swollen Perkiomen was choked with vacationists' bungalows, runaway boats, furniture, livestock, pets, boxes, crates, foodstuffs, trees, clothing—with almost everything it could tear loose in its path.

Perkiomen Valley

Perkiomen Creek rose to a height of 21 feet above normal water. More than 100 summer bungalows were washed away. Two towns isolated by floodwaters. Mills and roads closed, bridges washed away. Several children's camps were evacuated. Telephone, electric light, telegraph and gas service in Valley shut off. Landslide halts service on Schuylkill Division, P.R.R. at Phoenixville Tunnel.

August 9, 1942 - Heavy rainfall which began late on August 8th and continued into August 9th caused serious flooding on the East Branch Perkiomen Creek. Damage resulting from this flood was extensive throughout the study area, with the Borough of Sellersville being hardest hit. Figures 2 and 3 show photographs of the August 1942 flood in the Sellersville area.

EXCERPTS FROM THE DOYLESTOWN DAILY INTELLIGENCER, AUGUST 10, 1942[a] RELATIVE TO THE FLOOD OF AUGUST 9, 1942

PARTS OF SELLERSVILLE SUBMERGED IN FLOOD

Stores and the Moose Home Were Seriously Damaged

Following a torrential downpour of rain which began about 11 o'clock Saturday night and continued until nearly noon on Sunday, parts of this Borough were flooded with water which swept over the banks of the Branch Creek which rose almost 10 feet.

Located along Main Street, which is Route 309, homes were flooded, a drugstore had water more than four feet deep above the street level and trolley service on the Lehigh Valley Line was discontinued for several hours.

Water more than three feet deep backed into the trolley waiting room which is located along Lake Lenape Park Tract which was covered with water between five and six feet deep.

June 2, 1946 - On this date the Perkiomen Creek crested at its fourth highest level in its recorded history. The flood was produced by a heavy rainfall and caused some property damage in the Sellersville area. Roads were closed and many houses along the stream had flooded basements.

(a) Simulated from newspaper clippings.

EXCERPTS FROM THE DOYLESTOWN DAILY INTELLIGENCER, JUNE 3, 1946[a]
RELATIVE TO THE FLOOD OF JUNE 2, 1946

COUNTY FLOOD WORST IN SEVERAL YEARS

Roads Blocked By 4.61 Inch Rain Over Weekend, Streams in County Raging Torrents

All of Bucks County's streams, both large and small, were converted into raging torrents as the result of a very heavy downpour, which began late Saturday afternoon.

Although little property damage was caused, the basements of hundreds of homes in all sections of the county were inundated and firemen in numerous sections were called to pump out the water.

Route 132 at Neshmainy was blocked off, as well as Route 309 at Sellersville where a branch of the Perkiomen Creek turned that area into a miniature lake.

June 22, 1972 - Heavy rains associated with Tropical Storm Agnes caused the East Branch Perkiomen Creek to overflow its banks on this date. A Boy Scout Cabin in Lenape Park, Sellersville, was surrounded by water and is shown in Figure 4. U.S. Route 309 was covered with water but was not closed.

EXCERPTS FROM THE DOYLESTOWN DAILY INTELLIGENCER, JUNE 23, 1972[a]
RELATIVE TO THE FLOOD OF JUNE 22, 1972

TWO DIE IN MONCO FLOOD

Norristown Is Labeled An Island

The East Branch of Perkiomen Creek through Sellersville and Perkasie overflowed its banks, but no streets were closed. Most of the flooding was in Lenape Park which runs along the creek between the two Boroughs.

The Boy Scout Cabin in Lenape Park, Sellersville, was surrounded by water as the creek overflowed its banks in the low-lying park areas. The floodwaters rose high enough to run across Main Street in Sellersville, but not high enough to close the street to traffic.

December 20, 1973 - Rain beginning late this date and continuing into the following day caused flooding in the Borough of Sellersville. A flash flood warning had been issued for the area and the water level was still on the rise at the release of this news article.

(a) Simulated from newspaper clippings.

EXCERPTS FROM THE DOYLESTOWN DAILY INTELLIGENCER,[a] DECEMBER 21, 1973 RELATIVE TO THE FLOOD OF DECEMBER 20, 1973

BUCKS-MONTGOMERY STORM CLAIMS ONE LIFE

A flash flood warning lasting throughout the day had been issued because of downpours beginning Thursday afternoon that had drenched the Bucks-Montgomery area with over 3 inches of rain by midmorning today, swamping some roads and contributing to a highway fatality.

The East Branch Perkiomen Creek in Sellersville, had flooded part of the parking lot of the Borough Fire Company at 7 a.m., but was still below the level of the bridge on North Main Street at 10 a.m.

(a) Simulated from newspaper clippings.

FIGURES 2 and 3 - Sellersville area during the August 9, 1942, flood.

FIGURE 4 - Lenape Park in Sellersville during the June 22, 1972, flood.

FUTURE FLOODS

Floods of the same or larger magnitude as those that have occurred in the past could occur in the future. Larger floods have been experienced in the past on streams with similar geographical and physiographical characteristics as those found in the study area. Similar combinations of rainfall and runoff which caused these floods could occur in the study area. Therefore, to determine the flooding potential of the study area, it was necessary to consider storms and floods that have occurred in regions of like topography, watershed cover and physical characteristics. Discussion of the future floods in this report is limited to those that have been designated as the Intermediate Regional Flood and the Standard Project Flood. The estimates of the Intermediate Regional Flood and the Standard Project Flood as presented in this report are based on existing development of the watershed since future changes within the basin cannot be accurately predicted. The Standard Project Flood represents a reasonable upper limit of expected flooding in the study area. The Intermediate Regional Flood may reasonably be expected to occur more ferquently although it will not be as severe as the infrequent Standard Project Flood.

Intermediate Regional Flood

The Intermediate Regional Flood is defined as one that could occur once in 100 years on the average, although it could occur in any year. The peak flow of this flood was developed from statistical analyses of stream flow records at Graterford, Pennsylvania, in conjunction with regional synthetic analyses at selected locations along East Branch Perkiomen Creek and Indian Creek. Peak flows thus developed for the Intermediate Regional Flood at selected locations in the study area are shown in Table 4.

Standard Project Flood

The Standard Project Flood is defined as a major flood that can be expected to occur from a severe combination of meteorological and hydrological conditions that is considered reasonably characteristic of the geographical area in which the study area is located, excluding extremely rare combinations. The Corps of Engineers, in cooperation with the NOAA Weather Service, has made comprehensive studies and investigations based on the past records of experienced storms and floods and has developed generalized procedures for estimating the flood potential of streams. Peak discharges for the Standard Project Flood at selected locations in the study area are shown in Table 4. Discharge hydrographs for the Standard Project Flood at the mouths of East Branch Perkiomen and Indian Creeks are shown on Plates 21 and 22. The relative water surface elevations for the Intermediate Regional Flood and the Standard Project Flood are shown on Plates 13 through 18.

TABLE 4
PEAK FLOWS FOR INTERMEDIATE REGIONAL AND STANDARD PROJECT FLOODS

Location	Mileage Above Mouth	Drainage Area sq. mi.	Intermediate Regional Flood Discharge cfs	Standard Project Flood Discharge cfs
East Branch Perkiomen Creek				
Confluence with Perkiomen Creek	0.00	61.0	15,600	26,950
Downstream of confluence with Indian Creek	5.02	55.8	14,200	23,750
Camp Road	9.54	44.0	11,900	19,100
Dam No. 3	12.17	39.0	11,250	16,750
Montgomery-Bucks County Line	12.91	38.2	11,000	16,700
Downstream of confluence with Mill Creek	15.73	34.2	9,800	15,700
Main St. (Old U.S. Rte. 309)	16.23	28.8	8,500	13,400
Downstream of confluence with Pleasant Spring Creek	17.27	26.9	8,000	12,600
Callowhill Road	18.14	16.3	5,600	8,600
Downstream of confluence with Morris Run	20.42	13.6	4,700	7,300
Indian Creek				
Confluence with East Branch Perkiomen Creek	0.00	7.0	2,700	4,300
Pa. Route 63	0.92	5.9	2,300	3,700
Mill Road	2.19	3.6	1,400	2,200
Pa. Turnpike (Northeast Extension)	3.31	2.7	1,000	1,700
Allentown Road	3.81	1.9	700	1,100

Frequency

A frequency curve of peak flows on the East Branch Perkiomen Creek and Indian Creek was developed from a synthetic analysis because records of annual peak flows on these streams were not available. The curve presents the frequency of floodflows up to the magnitude of once in 100 years (Intermediate Regional Flood). Frequencies of floods equivalent to the Standard Project Flood and larger can be obtained through extrapolation of the curve, but it is not practical to assign a frequency to such large flows as their occurrence is so extremely rare. The curve, which is available upon request, reflects the judgment of engineers who have studied the area and are familiar with the region; however, it must be regarded as approximate and should be used with caution in connection with any planning of flood plain use.

Hazards of Large Floods

The extent of damage caused by any flood depends on the topography of the area flooded, depth and duration of flooding, velocity of flow, rate of rise, and developments in the flood plain. An Intermediate Regional or Standard Project Flood on East Branch Perkiomen Creek and Indian Creek would result in the inundation of numerous acres of land in the study area. Deep floodwater flowing at high velocity and carrying floating debris would create conditions hazardous to persons and vehicles attempting to cross flooded areas. In general, floodwater 3 or more feet deep and flowing at a velocity of 3 or more feet per second could easily sweep an adult person off his feet, thus creating definite danger of injury or drowning. Rapidly rising and swiftly flowing floodwater may trap persons in homes that are ultimately destroyed, or in vehicles that are ultimately submerged or floated. Waterlines can be ruptured by deposits of debris and the force of floodwaters, thus creating the possibility of contaminated domestic water supplies. Damaged sanitary sewer lines and sewage treatment plants could result in the pollution of floodwaters creating health hazards. Isolation of areas by floodwater could create hazards in terms of medical, fire, or law enforcement emergencies.

Flooded areas and flood damages - The areas along the East Branch Perkiomen Creek and Indian Creek that would be flooded by the Standard Project Flood are shown on Plate 2, which is also an index map to Plates 3 through 12. Areas that would be flooded by the Intermediate Regional and Standard Project Floods are shown in detail on Plates 3 through 12. The actual limits of these overflow areas may vary somewhat from those shown on the maps because the scale of the maps and contour intervals do not permit precise plotting of the flooded area boundaries. As may be seen from these plates, floodflows from the East Branch Perkiomen Creek and Indian Creek inundate a large portion of the East Branch Perkiomen Valley. The highest stages of flooding throughout the study area occur when the floodwaters from the East Branch Perkiomen Creek meet with the high stages of Perkiomen Creek.

The areas that would be flooded by the Intermediate Regional and Standard Project Floods include farmland and scattered commercial and residential properties, along with the associated streets, roads, and private and public utilities in the study area. Considerable damage to these facilities would occur during an Intermediate Regional Flood. However, due to the wider extent, greater depths of flooding, higher velocity flow and longer duration of flooding during a Standard Project Flood, damage would be even more severe than during an Intermediate Regional Flood. Plates 13 through 18 show water surface profiles for the Intermediate Regional and Standard Project Floods. Depth of flow in the channel can be estimated from these illustrations. Typical cross sections of the flood plain at selected locations, together with the water surface elevation and lateral extent of the Intermediate Regional and Standard Project Floods are shown on Plates 19 and 20.

Obstructions - During floods, debris collecting on bridges and culverts could decrease their carrying capacity and cause greater water depths (backwater effect) upstream of these structures. Since the occurrence and amount of debris are indeterminate factors, only the physical characteristics of the structures were considered in preparing profiles of the Intermediate Regional and Standard Project Floods. Similarly, the maps of flooded areas show the backwater effect of obstructive bridges and culverts, but do not reflect increased water surface elevation that could be caused by debris collecting against the structures, or by deposition of silt in the stream channel under structures. As previously indicated, there are 11 dams within the study area which have no flood control capacities nor will they seriously alter flow characteristics of floodwaters. Of the 43 bridges and culverts crossing the streams in the study area, many of them are obstructive to the Intermediate Regional Flood and even more are obstructive to the Standard Project Flood, In some cases bridges may be high enough so as not to be inundated by floodflows; however, the approaches to these bridges may be at lower elevations and subject to flooding and rendered impassable. Table 5 lists the water surface elevations for the Intermediate Regional and Standard Project Floods at all bridges and culverts within the study area.

Velocities of flow - Water velocities during floods depend largely on the size and shape of the cross sections, conditions of the stream and the bed slope, all of which vary on different streams and at different locations on the same stream. During an Intermediate Regional Flood, velocities of main channel flow for selected cross sections in the study area would vary from 2.0 to 9.7 feet per second. Overbank flow during the Intermediate Regional Flood for the same selected cross sections would vary from .9 to 3.7 feet per second. It is expected that the velocity of main channel flow during a Standard Project Flood would be slightly higher than during an Intermediate Regional Flood.

TABLE 5
ELEVATION DATA

Bridges Across East Branch Perkiomen Creek and Indian Creek

Identification	Mileage Above Mouth	Underclearance Elevation	Water Surface Elevation[a]	
			Intermediate Regional Flood	Standard Project Flood
		feet-mean sea level datum	feet - mean sea level datum	
East Branch Perkiomen Creek				
Skippack Pike (Pa. Rte. 73)	0.04	134.4	142.4	148.7
Garges Road	1.25	148.2 (b)	150.1	153.4
Bergeys Mill Road	2.23	166.0	159.6	163.2
Wawa Camp Road	3.36	177.2 (b)	173.9	177.2
Old Skippack Salfordville Road	4.16	184.8	187.2	189.3
Freeman School Road	4.86	195.9 (b)	193.9	198.9
Shelly Road	6.53	212.1 (b)	209.9	214.6
Old Sumneytown Pike	7.01	217.3	216.4	218.4
Pa. Rte. 63	7.11	218.0 (b)	216.8	219.2
Moyer Road	7.54	218.8	221.7	224.6
Fretz Road	8.98	239.2 (b)	234.9	238.1
Camp Road	9.54	242.8 (b)	240.2	244.5
Pa. Turnpike (Northeast Ext.)	11.06	299.0 (b)	254.6	256.5
Allentown Road	11.25	259.9 (b)	258.4	262.2
Cowpath Road	12.65	276.2	274.5	276.7
County Line Road	12.91	280.1	279.7	282.3
Cat Hill Road	13.95	288.1	287.4	289.6
Pa. Rte. 309 By-Pass	14.73	297.5	293.7	295.8
Reading Railroad	16.00	314.1	303.1	305.0
Main St. (Old Pa. Rte. 309)	16.23	303.7	304.9	307.1
Lenape Park (Foot Bridge)	17.09	309.2	308.3	310.0
East Walnut Street	17.40	314.0	309.7	312.1
Foot Bridge	17.75	311.3	312.9	314.7
E. Callowhill Street	18.14	314.1	316.3	317.5
Moods Bridge (Blooming Glen Rd.)	19.05	323.6	324.1	326.1
Branch Road	19.59	326.3	327.8	330.3
Schwenk Mill Road	20.12	331.4	333.7	335.2
Dublin Pike (Pa. Rte. 313)	21.11	338.7	341.7	343.9
Bucks Road	21.83	345.6	348.5	350.1
Elephant Road	22.55	358.0	357.3	360.4
Spruce Lane	23.11	368.1	371.5	373.9
Private Road	23.14	369.0	372.0	374.0
Private Road	23.70	385.7	389.4	389.5
Sweet Briar Road	23.84	394.6	396.2	396.7
Slotter Road	24.10	411.3	413.3	413.9
Indian Creek				
Indian Creek Road	0.02	193.1	197.2	201.2
Pa. Rte. 63	0.92	219.8	214.7	217.9
Orchard Lane	1.70	230.2	234.8	235.1
Mill Road	2.19	244.3	242.4	245.7
Clemens Road	2.49	254.2	251.5	253.4
Keller Road	3.00	276.2	273.8	274.5
Pa. Turnpike (Northeast Ext.)	3.31	294.0	290.8	293.2
Allentown Road	3.81	310.7	309.2	311.1

(a) Flood elevations are reported for the upstream side of the bridge.
(b) Elevation at centerline of the stream.

In general, water flowing at 2 feet per second or less would deposit debris and silt, while floodwater 3 or more feet deep and flowing at a velocity of 3 or more feet per second could easily sweep an adult person off his feet, causing injury or drowning. Floodwater flowing at greater velocities is capable of causing severe erosion to streambanks and fill around bridge abutments and transporting large objects. Table 6 lists the maximum velocities that would occur in the main channel and overbank areas at selected locations on East Branch Perkiomen Creek and Indian Creek during the Intermediate Regional and the Standard Project Floods.

TABLE 6
MAXIMUM VELOCITIES

East Branch Perkiomen Creek and Indian Creek

Cross (a) Section	Mileage Above Mouth	Maximum Velocities			
		Intermediate Regional Flood		Standard Project Flood	
		Channel	Overbank(b)	Channel	Overbank(b)
		ft/sec	ft/sec	ft/sec	ft/sec
East Branch Perkiomen Creek					
A	.86	5.0	2.1	5.6	2.6
E	4.99	5.0	2.5	5.3	2.7
I	6.80	5.5	2.5	5.8	2.7
N	10.01	5.5	2.3	5.8	2.6
6	14.59	3.5	2.1	4.0	2.5
12	19.01	3.5	1.7	3.9	2.0
15	21.01	3.6	1.3	4.0	1.5
16	21.73	2.1	0.9	2.4	1.1
Indian Creek					
1	0.36	9.7	2.7	11.4	3.7
4	2.67	7.2	1.9	8.8	2.9

(a) See Plates 19 and 20 for locations of cross sections
(b) Value given is maximum of left or right overbank velocity.

Rates of rise and duration of flooding - Intense rainfalls that accompany severe storm fronts usually produce the floods on East Branch Perkiomen Creek and Indian Creek. There may be a time lag of several hours before overbank flooding occurs along the main stream. Floods generally rise slowly and remain out of banks for long periods of time. Table 7 gives the maximum rate of rise, height of rise (from critical stage level to maximum floodflow level), time of rise (time period corresponding to height of rise), and duration of critical stage (period of time flooding is above critical stage level) for the Standard Project Flood

at selected cross section locations on East Branch Perkiomen Creek and Indian Creek. Standard Project Flood Hydrographs for East Branch Perkiomen and Indian Creeks are shown on Plates 21 and 22.

TABLE 7
RATES OF RISE AND DURATION OF FLOODING

Location	Mileage Above Mouth	Standard Project Flood: Maximum Rate of Rise	Height of Rise	Time of Rise	Duration of Critical Stage
		ft/hr	ft	hrs	hrs
East Branch Perkiomen Creek					
Cross Section F	5.10	1.7	14.2	28.4	65.5
Cross Section N	10.01	2.1	11.3	26.2	56.2
Indian Creek					
Cross Section 4	2.67	1.0	2.5	4.0	25.0

Photographs, future flood heights - The levels that the Intermediate Regional and Standard Project Floods might reach at various locations in the East Branch Perkiomen Valley are indicated on the following photographs.

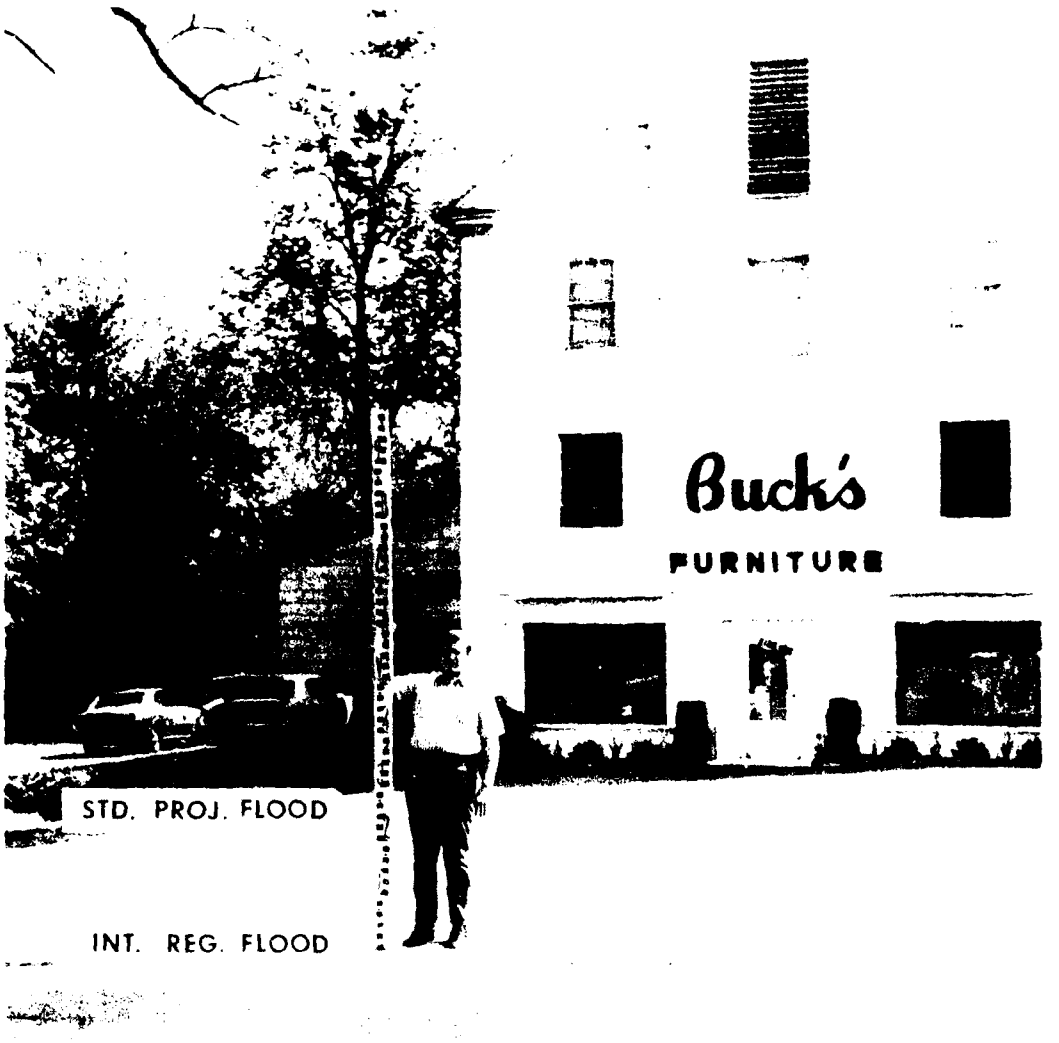


FIGURE 5 - Possible future flood heights at Buck's Furniture Store in Sellersville.

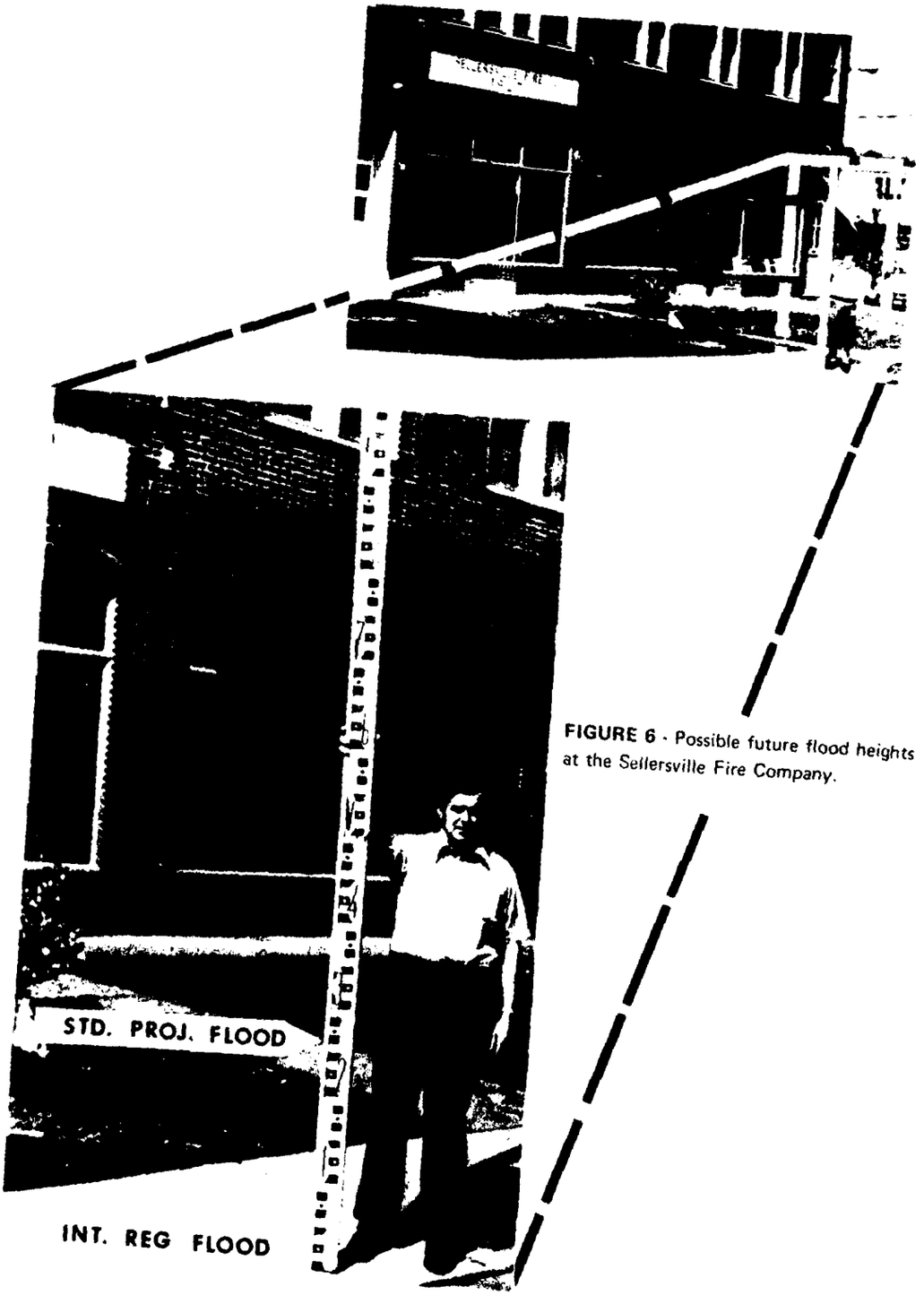


FIGURE 6 - Possible future flood heights at the Sellersville Fire Company.

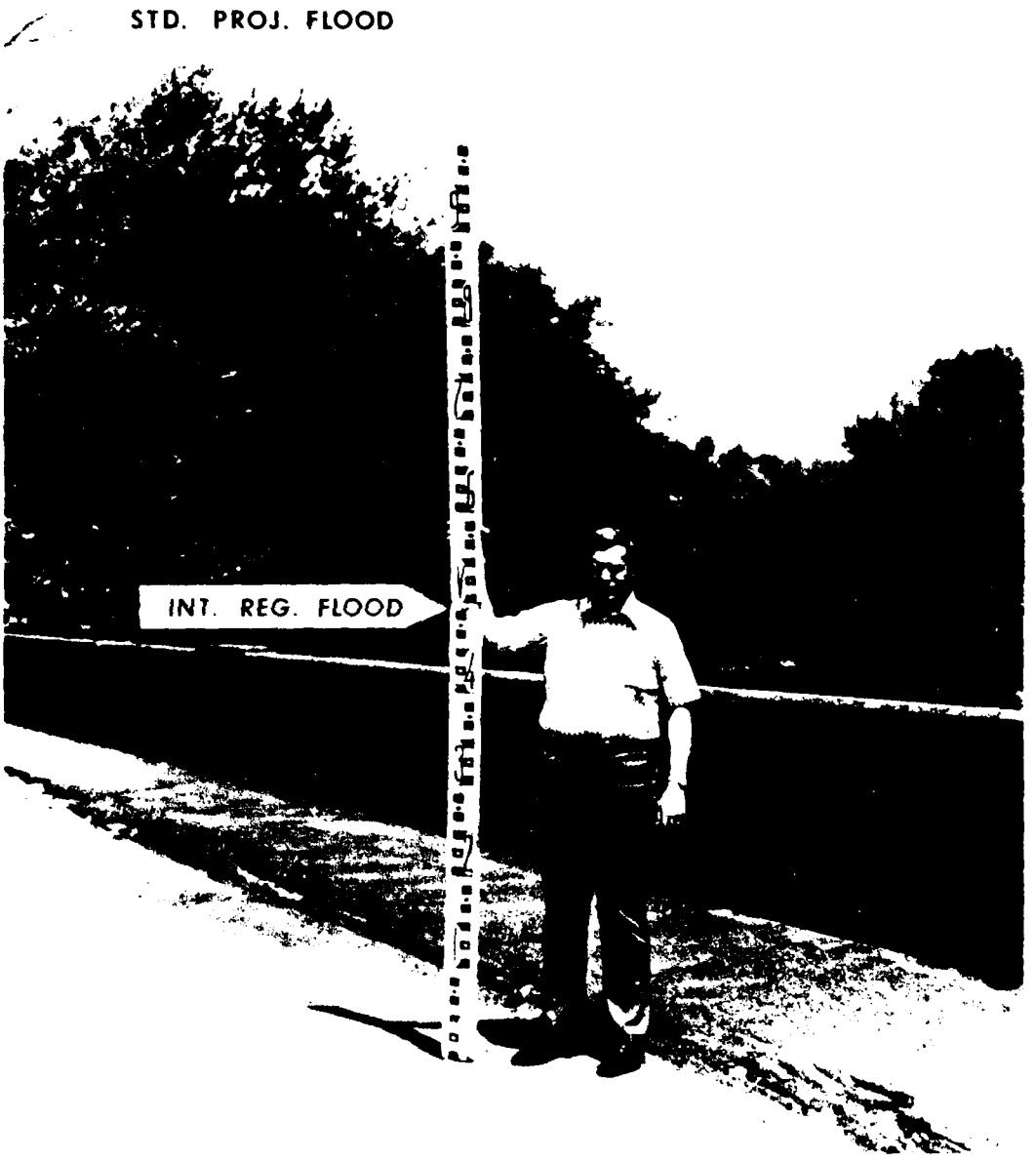


FIGURE 7 - Possible future flood heights at Skippack Road Bridge (Pa. Rte. 73).

FIGURE 8 - Possible future flood heights of Indian Creek at the Indian Creek Road Bridge.

GLOSSARY

Backwater. The resulting high water surface in a given stream due to a downstream obstruction or high stages in an intersecting stream.

Flood. An overflow of lands not normally covered by water and that are used or usable by man. Floods have two essential characteristics: The inundation of land is temporary and the land is adjacent to and inundated by overflow from a river, stream, ocean, lake, or other body of standing water.

Normally a "flood" is considered as any temporary rise in streamflow or stage, but not the ponding of surface water, that results in significant adverse effects in the vicinity. Adverse effects may include damages from overflow of land areas, temporary backwater effects in sewers and local drainage channels, creation of unsanitary conditions or other unfavorable situations by deposition of materials in stream channels during flood recessions, rise of ground water coincident with increased streamflow, and other problems.

Flood Crest. The maximum stage or elevation reached by the waters of a flood at a given location.

Flood Plain. The areas adjoining a river, stream, watercourse, ocean, lake, or other body of standing water that have been or may be covered by floodwater.

Flood Profile. A graph showing the relationship of water surface elevation to location, the latter generally expressed as distance above mouth for a stream of water flowing in an open channel. It is generally drawn to show surface elevation for the crest of a specific flood, but may be prepared for conditions at a given time or stage.

Flood Stage. The stage or elevation at which overflow of the natural banks of a stream or body of water begins in the reach or area in which the elevation is measured.

Hurricane. An intense cyclonic windstorm of tropical origin in which winds tend to spiral inward in a counterclockwise direction toward a core of low pressure, with maximum surface wind velocities that equal or exceed 75 miles per hour (65 knots) for several minutes or longer at some points. Tropical storm is the term applied if maximum winds are less than 75 miles per hour.

Hydrograph. A graph showing flow values against time at a given point, usually measured in cubic feet per second. The area under the curve indicates total volume of flow.

Intermediate Regional Flood. A flood having an average frequency of occurrence in the order of once in 100 years although the flood may occur in any year. It is based on statistical analyses of streamflow records available for the watershed and analyses of rainfall and runoff characteristics in the general region of the watershed.

Left Bank. The bank on the left side of a river, stream, or watercourse, looking downstream.

Right Bank. The bank on the right side of a river, stream, or watercourse, looking downstream.

Standard Project Flood. The flood that may be expected from the most severe combination of meteorological and hydrological conditions that are considered reasonably characteristic of the geographical area in which the drainage basin is located, excluding extremely rare combinations. Peak discharges for these floods are generally about 40-60 percent of the Probable Maximum Floods for the same basins. As used by the Corps of Engineers, Standard Project Floods are intended as practicable expressions of the degree of protection that should be sought in the design of flood control works, the failure of which might be disastrous.

Underclearance Elevation. The elevation at the top of the opening of a culvert, or other structure through which water may flow along a watercourse.

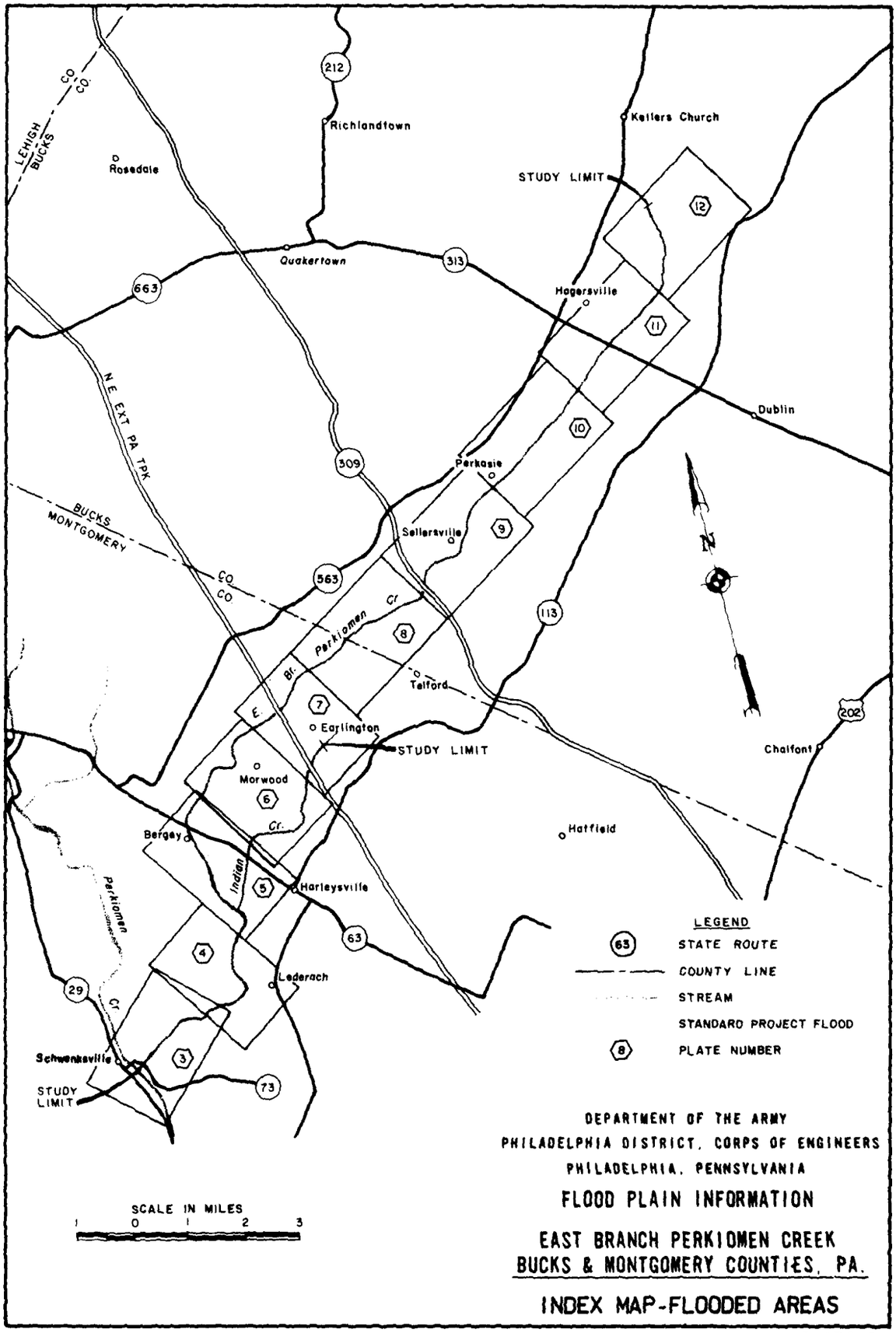
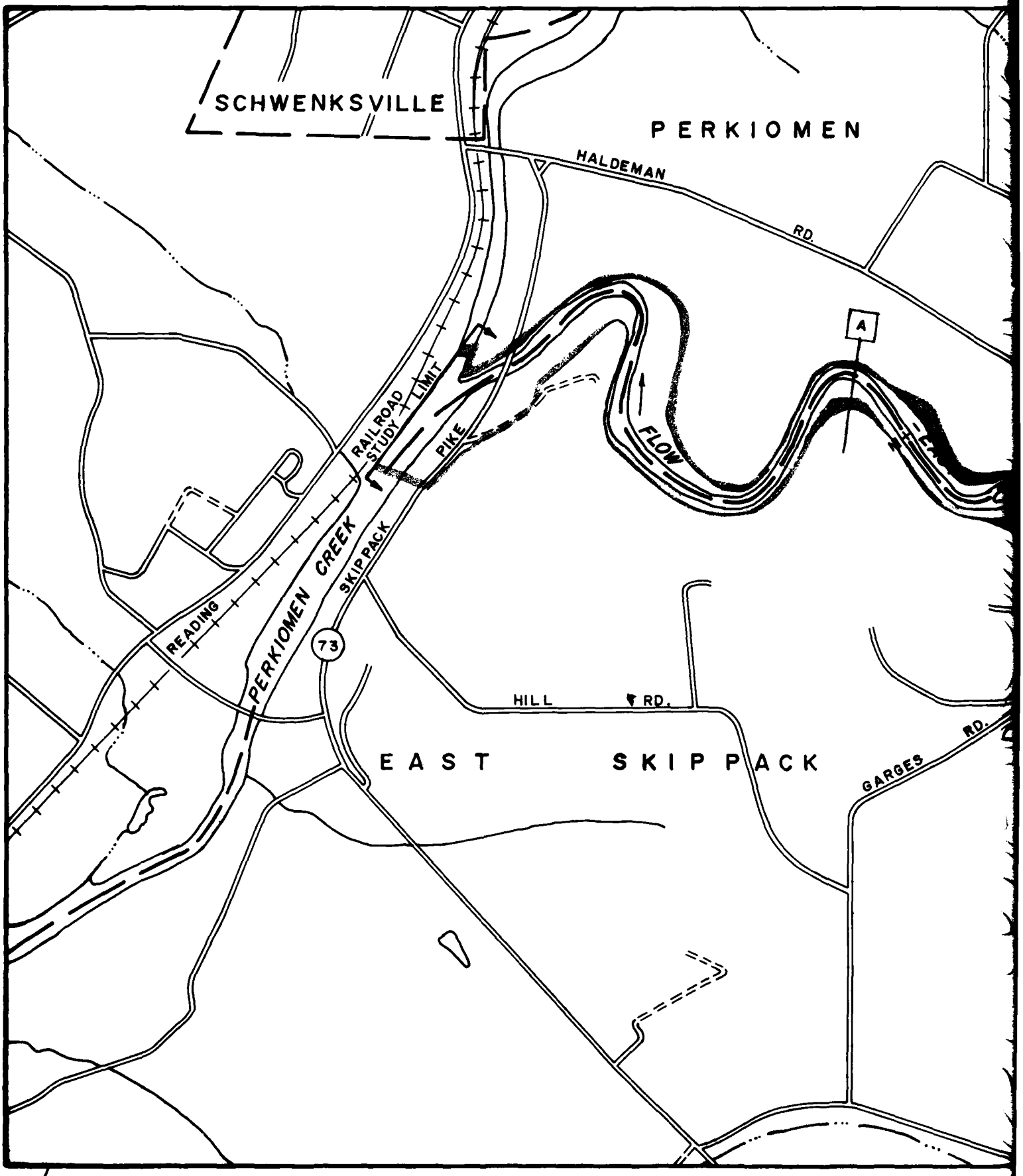

212
Richlandtown
Kellers Church
LEHIGH CO.
BUCKS CO.
Rosedale
STUDY LIMIT
12
Quakertown
313
663
Hagersville
11
N.E. EXT PA TPK
Dublin
10
309
Perkasie
BUCKS
MONTGOMERY
CO.
CO.
Sellersville
9
563
Perkiomen Cr.
Br.
8
113
Telford
E.
7
Earlington
STUDY LIMIT
202
Chalfont
Morwood
6
Cr.
Hatfield
Bergey
Indian
Harleysville
5
Perkiomen
63
4
Lederach
29
Cr.
Schwenksville
3
73
STUDY LIMIT
LEGEND
63 STATE ROUTE
COUNTY LINE
STREAM
STANDARD PROJECT FLOOD
8 PLATE NUMBER
SCALE IN MILES
1 0 1 2 3
DEPARTMENT OF THE ARMY
PHILADELPHIA DISTRICT, CORPS OF ENGINEERS
PHILADELPHIA, PENNSYLVANIA
FLOOD PLAIN INFORMATION
EAST BRANCH PERKIOMEN CREEK
BUCKS & MONTGOMERY COUNTIES, PA.
INDEX MAP-FLOODED AREAS

PLATE 2


SCHWENKSVILLE
PERKIOMEN
HALDEMAN
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STUDY
LIMIT
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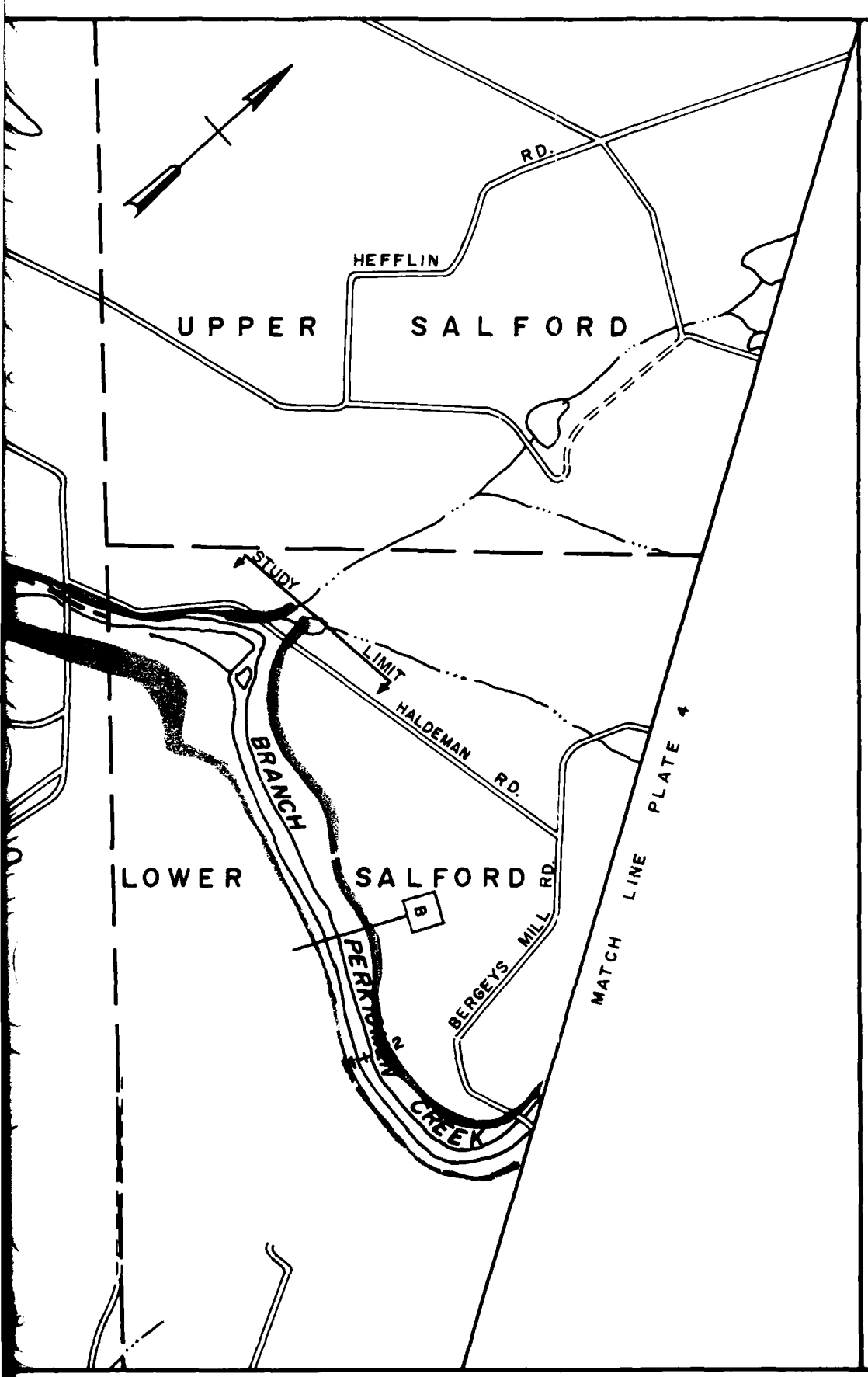
PERKIOMEN CREEK
SKIPPACK
READING
73
HILL
RD.
EAST
SKIP PACK
GARGES
RD.



LEGEND

OVERFLOW LIMITS

INTERMEDIATE REGIONAL FLOOD		STANDARD PROJECT FLOOD

GROUND ELEVATION IN FEET (U.S.C. & G.S. 1929 ADJ.) SE LEVEL DATUM

M+2 MILES ABOVE MOUTH

A CROSS SECTION

TOWNSHIP OR BORO LIMITS

73 STATE ROUTE

NOTES

1. MAP BASED ON U.S.G.S. 7.5 MIN. QUAD SHEET: PERKIOMENVILLE, PA. 1969, TE PA. 1969, QUAKERTOWN, PA. 1969 & BEDMINSTER, PA. 1968 MINOR ADDITI ADJUSTMENTS MADE BY CORPS OF ENGINE
2. LIMITS OF OVERFLOW SHOWN MAY VARY F ACTUAL LOCATION ON GROUND AS EXPLAI THE REPORT.
3. AREAS OUTSIDE THE FLOOD PLAIN MAY B SUBJECT TO FLOODING FROM LOCAL RUNO
4. MINIMUM CONTOUR INTERVAL 20 FEET

SCALE IN FEET

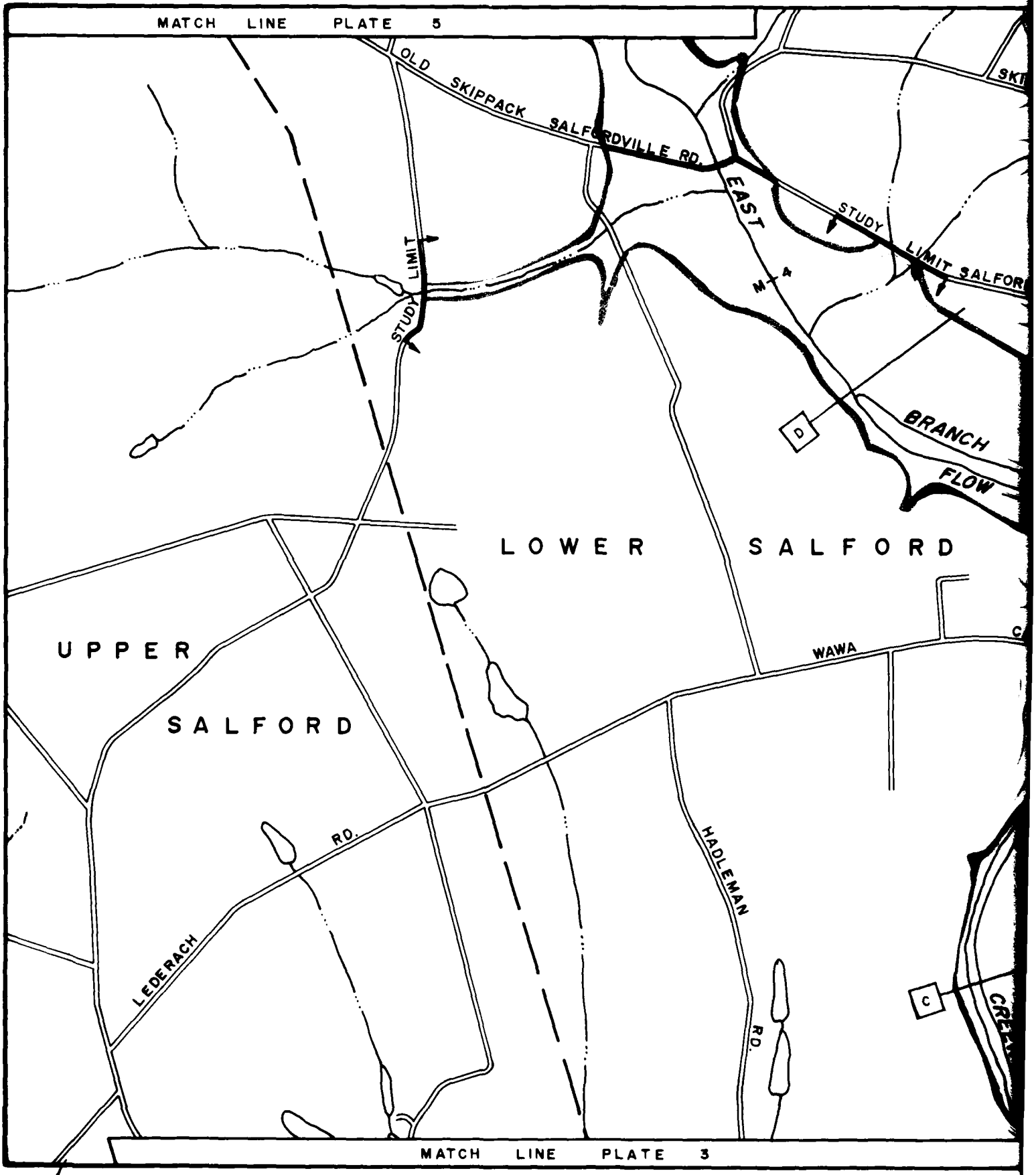
0 800 1600

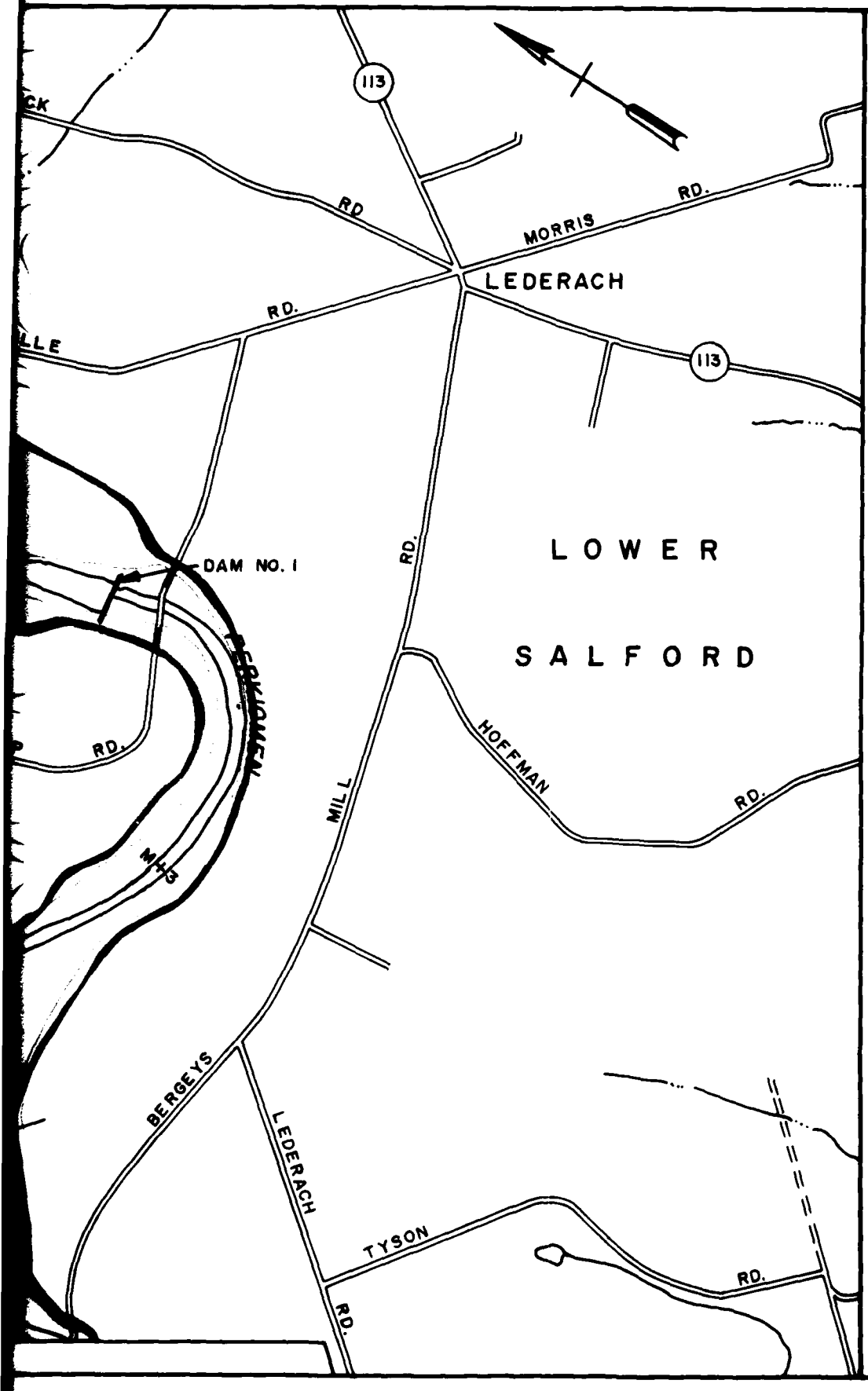
DEPARTMENT OF THE ARMY
PHILADELPHIA DISTRICT, CORPS OF ENGIN
PHILADELPHIA, PENNSYLVANIA

FLOOD PLAIN INFORMATION

EAST BRANCH PERKIOMEN CREEK
BUCKS & MONTGOMERY COUNTIES,
FLOODED AREAS

2 PLATE


MATCH LINE PLATE 5
OLD SKIPPACK SALFORDVILLE RD.
EAST
STUDY LIMIT
STUDY LIMIT SALFOR
BRANCH
FLOW
D
LOWER SALFORD
UPPER SALFORD
WAWA
RD.
LEDERACH
HADLEMAN
RD.
C
MATCH LINE PLATE 3



LEGEND

OVERFLOW LIMITS

INTERMEDIATE REGIONAL FLOOD		STANDARD PROJECT FLOOD

GROUND ELEVATION IN FEET (U.S.C. & G.S. 1929 ADJ.) SEA LEVEL DATUM

M+3 MILES ABOVE MOUTH

D CROSS SECTION

TOWNSHIP OR BORO LIMITS

113 STATE ROUTE

NOTES

1. MAP BASED ON U.S.G.S. 7.5 MIN. QUADRA SHEET: PERKIOMENVILLE, PA. 1969, TELF PA. 1969, QUAKERTOWN, PA. 1969 & BEDMINSTER, PA. 1968 MINOR ADDITIONS ADJUSTMENTS MADE BY CORPS OF ENGINEER
2. LIMITS OF OVERFLOW SHOWN MAY VARY FRO ACTUAL LOCATION ON GROUND AS EXPLAINE THE REPORT.
3. AREAS OUTSIDE THE FLOOD PLAIN MAY BE SUBJECT TO FLOODING FROM LOCAL RUNOFF
4. MINIMUM CONTOUR INTERVAL 20 FEET

SCALE IN FEET

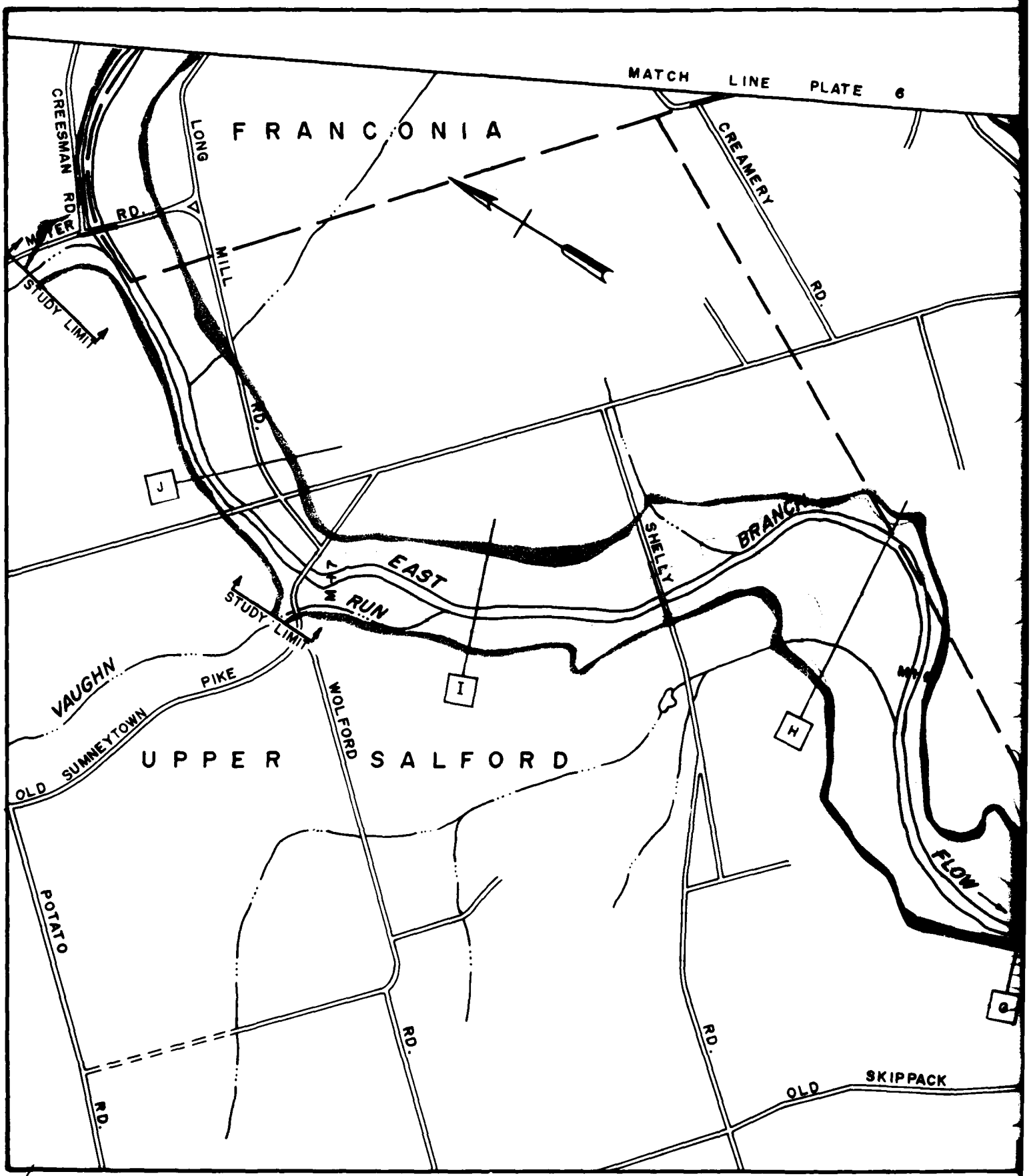
0 800 1600

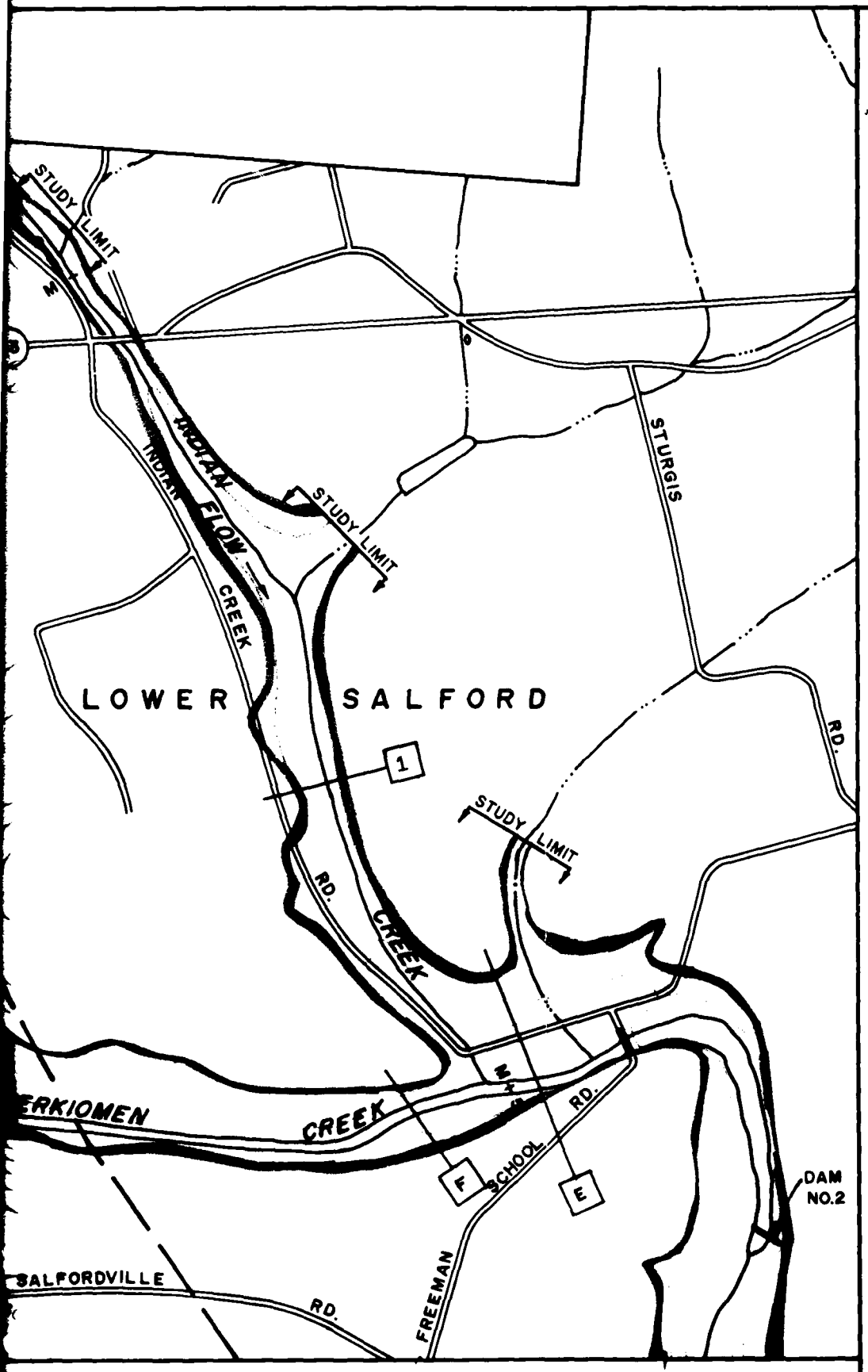
DEPARTMENT OF THE ARMY
PHILADELPHIA DISTRICT, CORPS OF ENGIN
PHILADELPHIA, PENNSYLVANIA

FLOOD PLAIN INFORMATION

EAST BRANCH PERKIOMEN CREEK
BUCKS & MONTGOMERY COUNTIES, P
FLOODED AREAS

PLATE


MATCH LINE PLATE 6
FRANCONIA
CREESMAN RD.
LONG MILL RD.
CREAMERY RD.
STUDY LIMIT
J
I
H
EAST BRANCH
SHELLY
STUDY LIMIT
VAUGHN
PIKE
OLD SUMNEYTOWN
WOLFORD
UPPER SALFORD
POTATO
RD.
RD.
RD.
OLD SKIPPACK
FLOW



LEGEND

OVERFLOW LIMITS

INTERMEDIATE REGIONAL FLOOD		STANDARD PROJECT FLOOD

GROUND ELEVATION IN FEET (U.S.C. & G.S. 1929 ADJ.) SEA LEVEL DATUM

M+6 MILES ABOVE MOUTH

E CROSS SECTION

TOWNSHIP OR BORO LIMITS

63 STATE ROUTE

NOTES

1. MAP BASED ON U.S.G.S. 7.5 MIN. QUADRAN SHEET: PERKIOMENVILLE, PA. 1968, TELFO PA. 1969, QUAKERTOWN, PA. 1969 & BEDMINSTER, PA. 1968 MINOR ADDITIONS ADJUSTMENTS MADE BY CORPS OF ENGINEERS
2. LIMITS OF OVERFLOW SHOWN MAY VARY FRO ACTUAL LOCATION ON GROUND AS EXPLAINED THE REPORT.
3. AREAS OUTSIDE THE FLOOD PLAIN MAY BE SUBJECT TO FLOODING FROM LOCAL RUNOFF.
4. MINIMUM CONTOUR INTERVAL 20 FEET

SCALE IN FEET

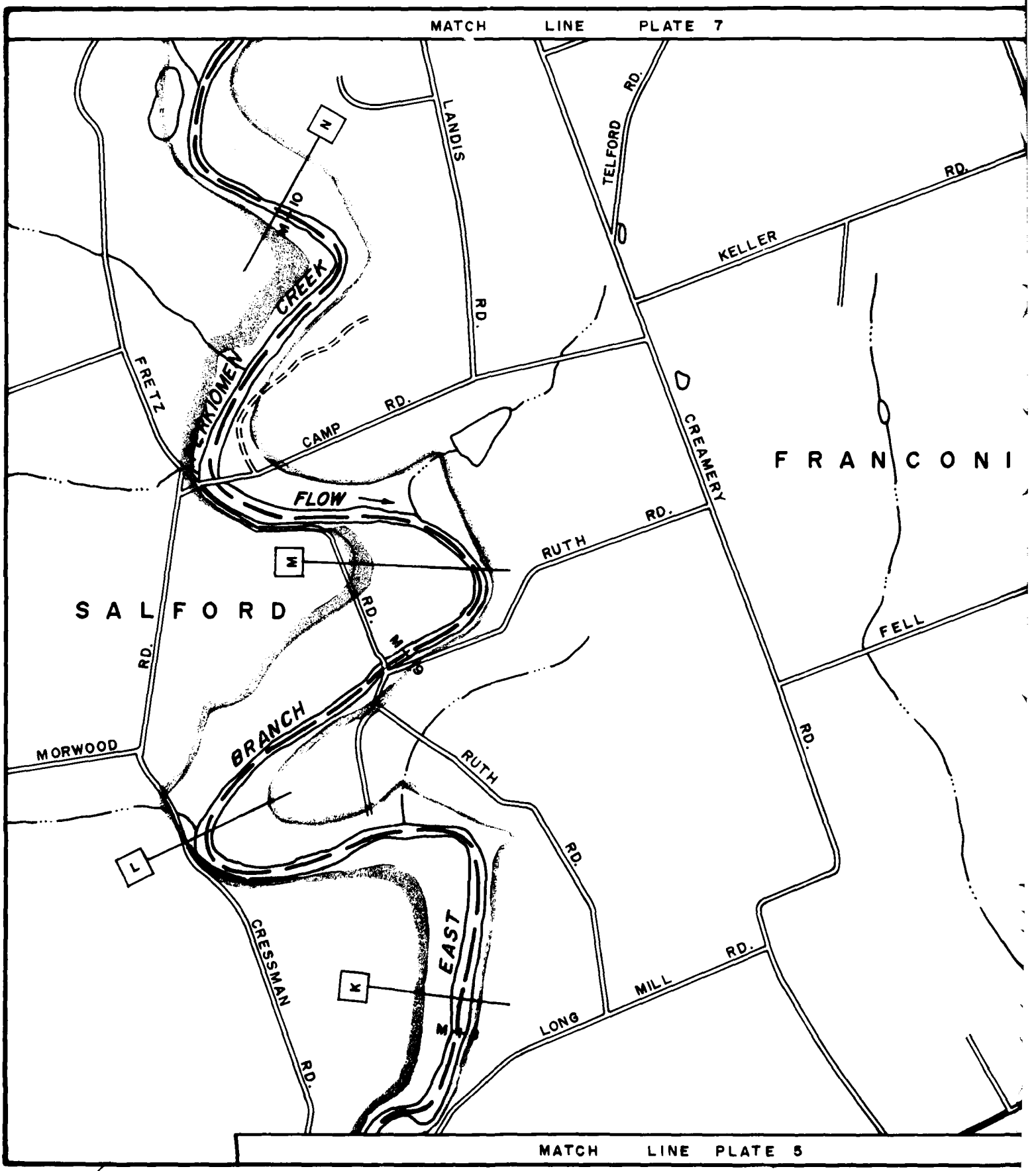
0 800 1600

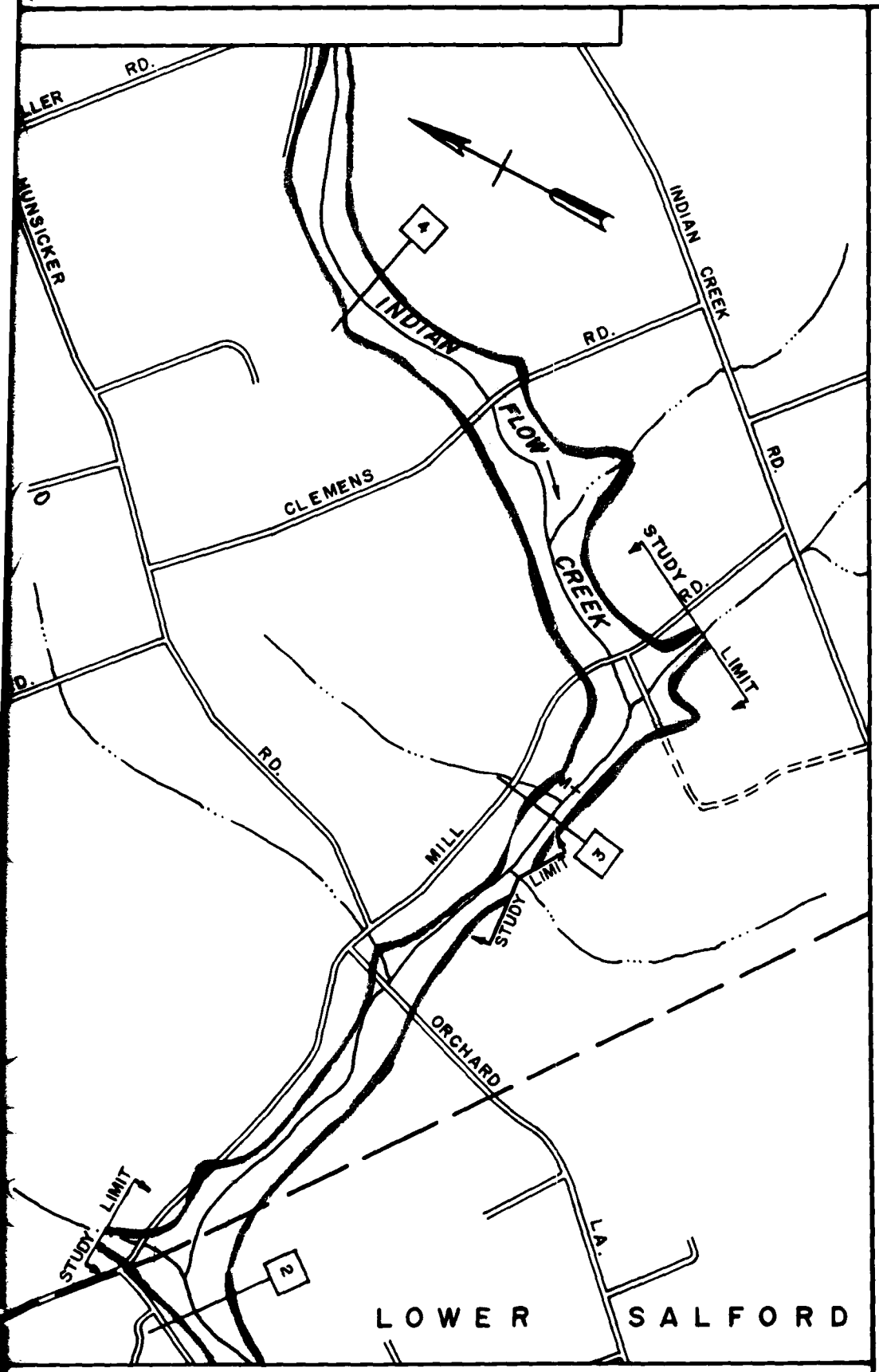
DEPARTMENT OF THE ARMY
PHILADELPHIA DISTRICT, CORPS OF ENGINI
PHILADELPHIA, PENNSYLVANIA

FLOOD PLAIN INFORMATION

EAST BRANCH PERKIOMEN CREEK
BUCKS & MONTGOMERY COUNTIES, P
FLOODED AREAS

PLAT


MATCH LINE PLATE 7
LANDIS RD.
TELFORD RD.
KELLER RD.
CREEK
FRETZ
CAMP RD.
CREAMERY RD.
FRANCONI
FLOW
RUTH RD.
SALFORD
RD.
FELL RD.
BRANCH
MORWOOD RD.
RUTH RD.
CRESSMAN RD.
EAST
MILL RD.
LONG
MATCH LINE PLATE 5



LEGEND

OVERFLOW LIMITS

INTERMEDIATE REGIONAL FLOOD	STANDARD PROJECT FLOOD

GROUND ELEVATION IN FEET (U.S.C. & G.S. 1929 ADJ.) SEA LEVEL DATUM

M+9 MILES ABOVE MOUTH

4 CROSS SECTION

TOWNSHIP OR BORO LIMITS

NOTES

1. MAP BASED ON U.S.G.S. 7.5 MIN. QUADRA SHEET: PERKIOMENVILLE, PA. 1969, TELF PA. 1969, QUAKERTOWN, PA. 1969 & BEDMINSTER, PA. 1968 MINOR ADDITIONS ADJUSTMENTS MADE BY CORPS OF ENGINEER
2. LIMITS OF OVERFLOW SHOWN MAY VARY FR ACTUAL LOCATION ON GROUND AS EXPLAIN THE REPORT.
3. AREAS OUTSIDE THE FLOOD PLAIN MAY BE SUBJECT TO FLOODING FROM LOCAL RUNOFF
4. MINIMUM CONTOUR INTERVAL 20 FEET

SCALE IN FEET

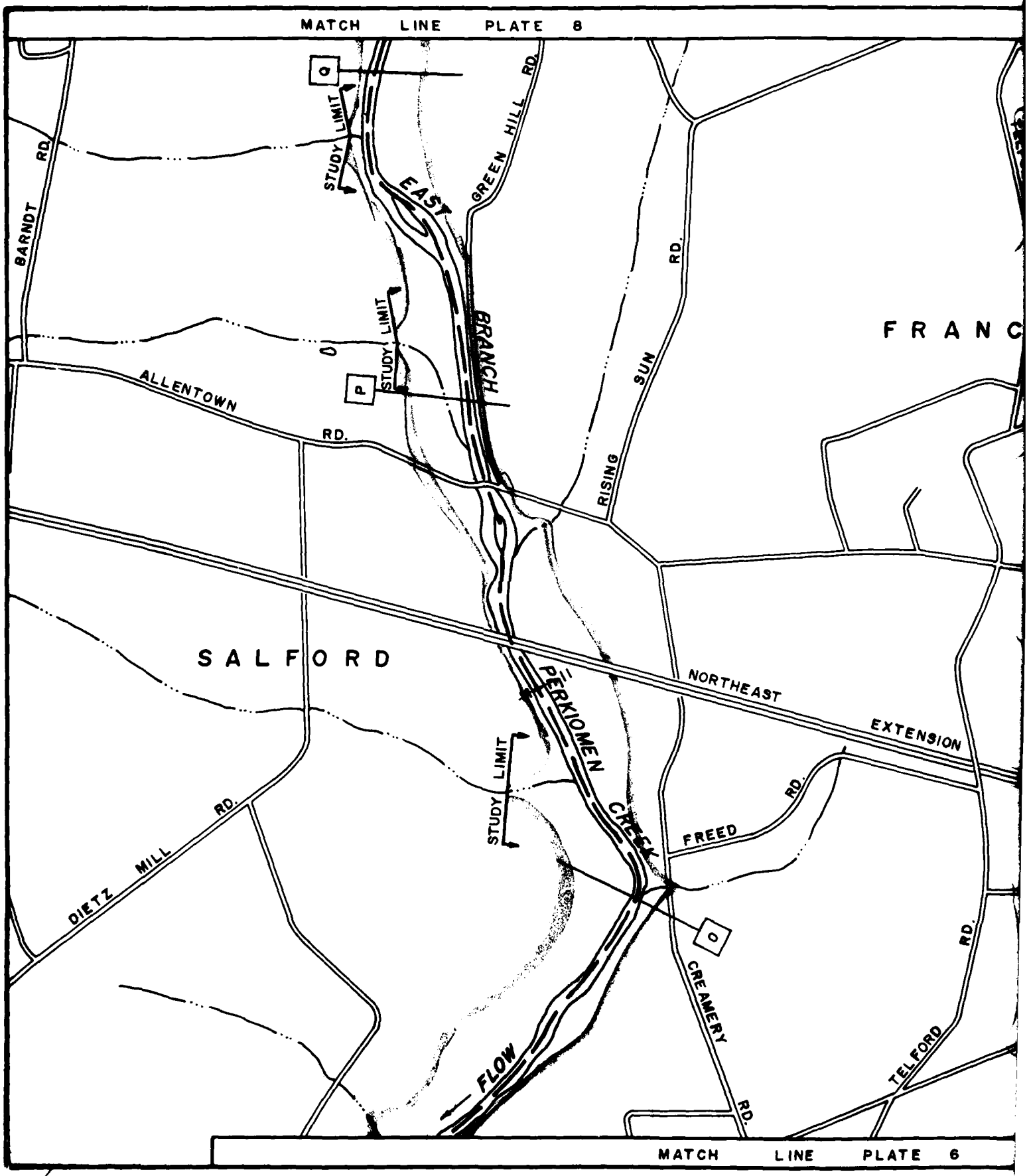
0 800 1600

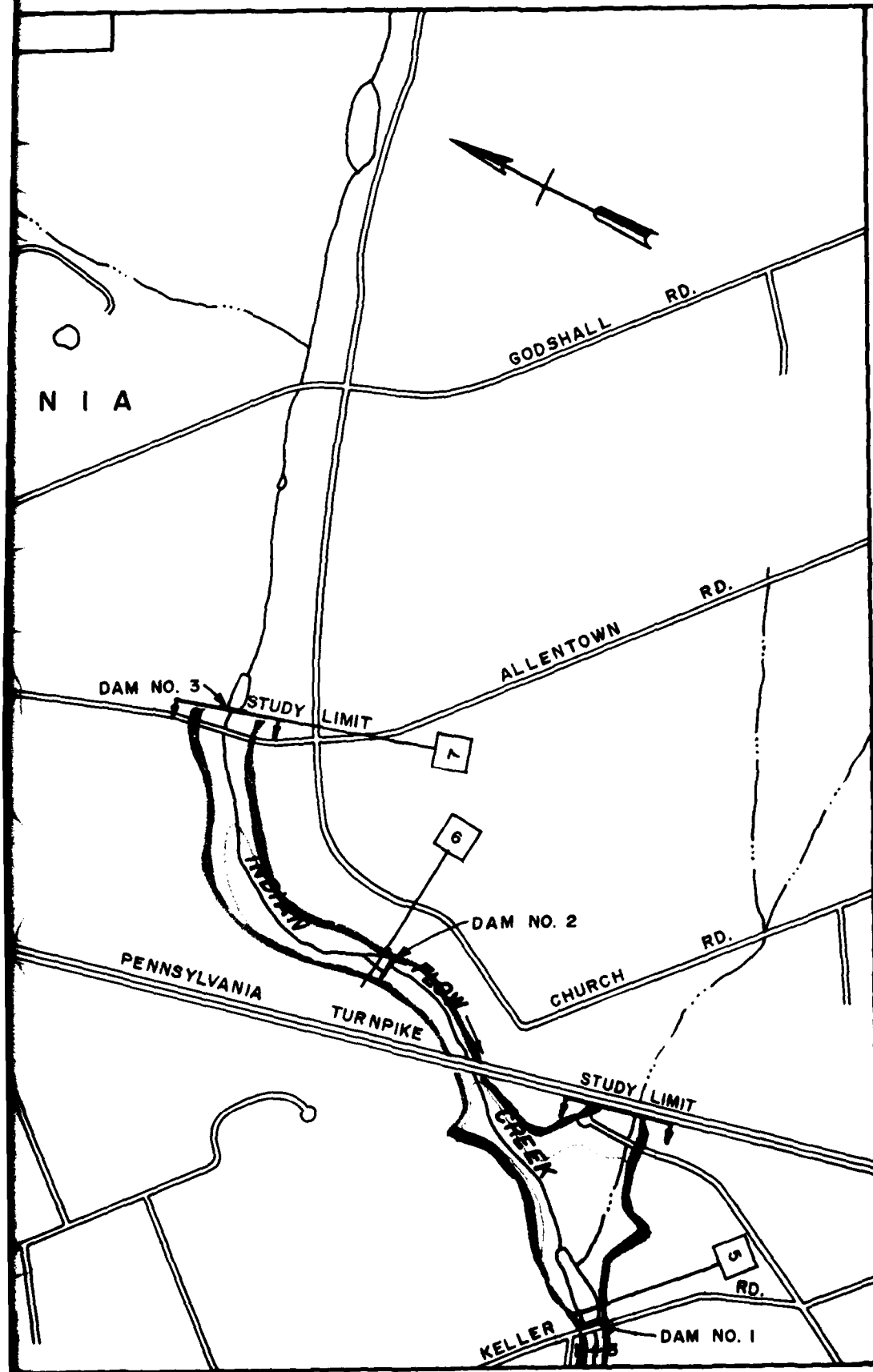
DEPARTMENT OF THE ARMY
PHILADELPHIA DISTRICT, CORPS OF ENGI
PHILADELPHIA, PENNSYLVANIA

FLOOD PLAIN INFORMATION

EAST BRANCH PERKIOMEN CREEK
BUCKS & MONTGOMERY COUNTIES.
FLOODED AREAS

PLATE


MATCH LINE PLATE 8
STUDY LIMIT
EAST BRANCH
GREEN HILL RD.
BARNDT RD.
STUDY LIMIT
STUDY LIMIT
ALLENTOWN RD.
RISING SUN RD.
FRANC
SALFORD
NORTHEAST EXTENSION
PERKIOMEN CREEK
FREED RD.
DIETZ MILL RD.
CREAMERY RD.
TELFORD RD.
FLOW
MATCH LINE PLATE 6



LEGEND

OVERFLOW LIMITS

INTERMEDIATE REGIONAL FLOOD — STANDARD PROJECT FLOOD

GROUND ELEVATION IN FEET (U.S.C. & G.S. 1929 ADJ.) SEA LEVEL DATUM

M+11 MILES ABOVE MOUTH

Q CROSS SECTION

TOWNSHIP OR BORO LIMITS

NOTES

1. MAP BASED ON U.S.G.S. 7.5 MIN. QUADRA SHEET: PERKIOMENVILLE, PA. 1969, TELF PA. 1969, QUAKERTOWN, PA. 1969 & BEDMINSTER, PA. 1968. MINOR ADDITIONS ADJUSTMENTS MADE BY CORPS OF ENGINEER
2. LIMITS OF OVERFLOW SHOWN MAY VARY FRO ACTUAL LOCATION ON GROUND AS EXPLAINE THE REPORT.
3. AREAS OUTSIDE THE FLOOD PLAIN MAY BE SUBJECT TO FLOODING FROM LOCAL RUNOFF.
4. MINIMUM CONTOUR INTERVAL 20 FEET

SCALE IN FEET

0 800 1600

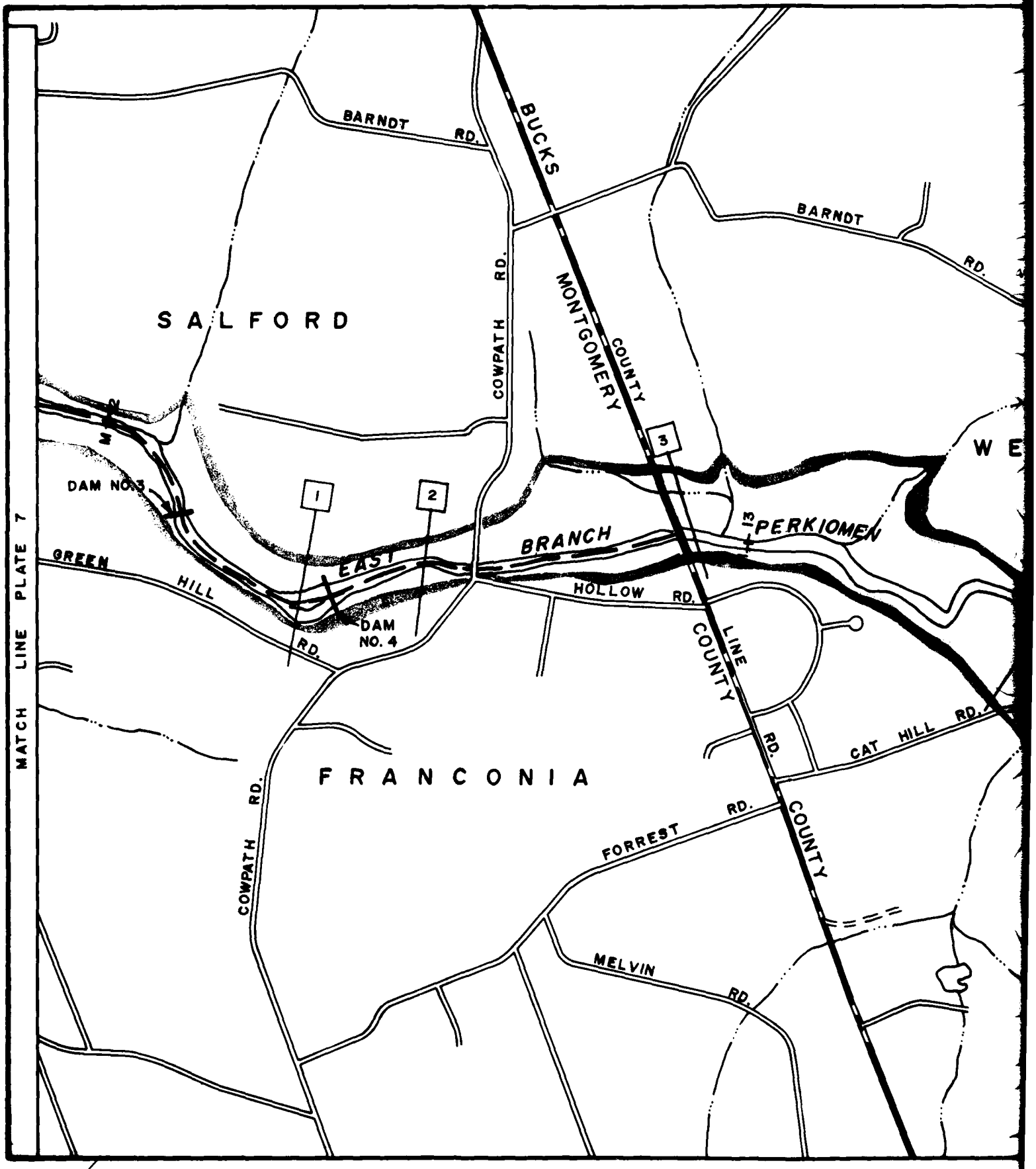
DEPARTMENT OF THE ARMY
PHILADELPHIA DISTRICT, CORPS OF ENGIN
PHILADELPHIA, PENNSYLVANIA

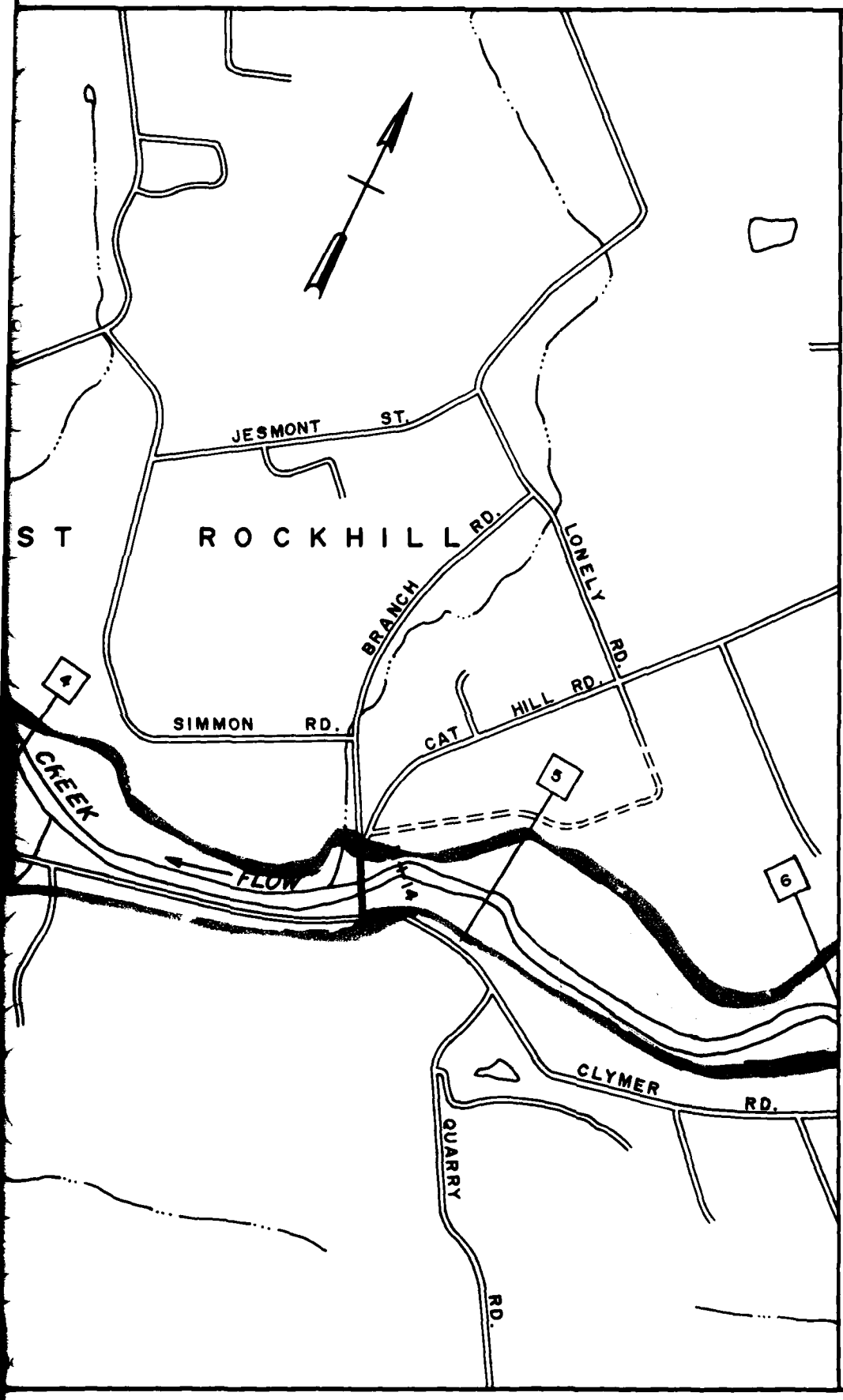
FLOOD PLAIN INFORMATION

EAST BRANCH PERKIOMEN CREEK
BUCKS & MONTGOMERY COUNTIES, PA.

FLOODED AREAS

PL AT


MATCH LINE PLATE 7
BARNDT RD.
BUCKS
COUNTY
MONTGOMERY
COUNTY
BARNDT RD.
SALFORD
COWPATH RD.
DAM NO. 3
1
2
3
EAST BRANCH
PERKIOMEN
GREEN HILL RD.
HOLLOW RD.
DAM NO. 4
LINE
COUNTY
CAT HILL RD.
FRANCONIA
COWPATH RD.
FORREST RD.
COUNTY
MELVIN RD.



LEGEND

OVERFLOW LIMITS

INTERMEDIATE REGIONAL FLOOD — STANDARD PROJECT FLOOD

GROUND ELEVATION IN FEET (U.S.C. & G.S. 1929 ADJ.) SE LEVEL DATUM

M+13 MILES ABOVE MOUTH

6 CROSS SECTION

TOWNSHIP OR BORO LIMITS

NOTES

1. MAP BASED ON U.S.G.S. 7.5 MIN. QUAD SHEET: PERKIOMENVILLE, PA. 1969, TE PA. 1969, QUAKERTOWN, PA. 1969 & BEDMINSTER, PA. 1968. MINOR ADDITI ADJUSTMENTS MADE BY CORPS OF ENGINE
2. LIMITS OF OVERFLOW SHOWN MAY VARY F ACTUAL LOCATION ON GROUND AS EXPLAI THE REPORT.
3. AREAS OUTSIDE THE FLOOD PLAIN MAY B SUBJECT TO FLOODING FROM LOCAL RUNO
4. MINIMUM CONTOUR INTERVAL 20 FEET

SCALE IN FEET

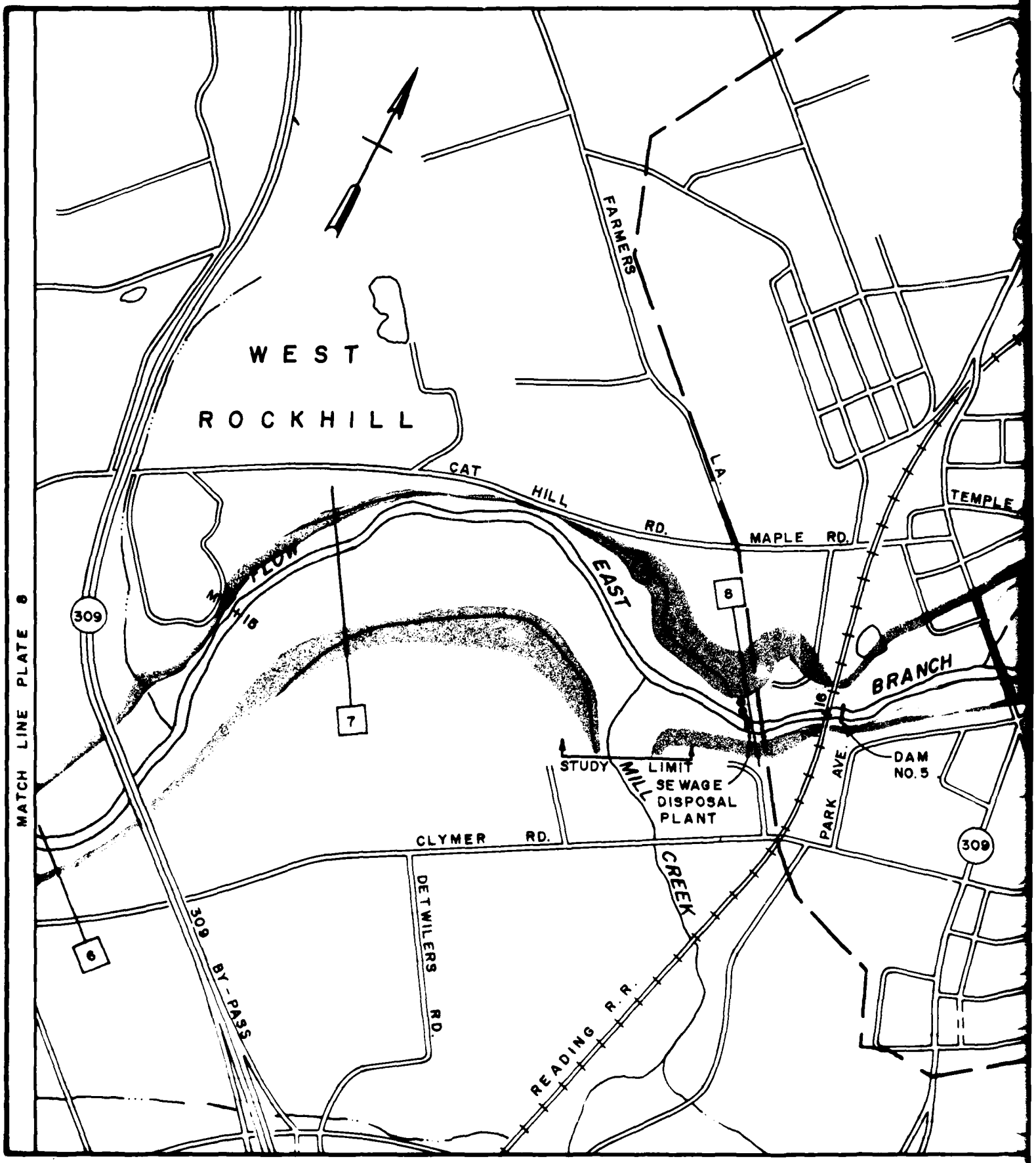
0 800 1600

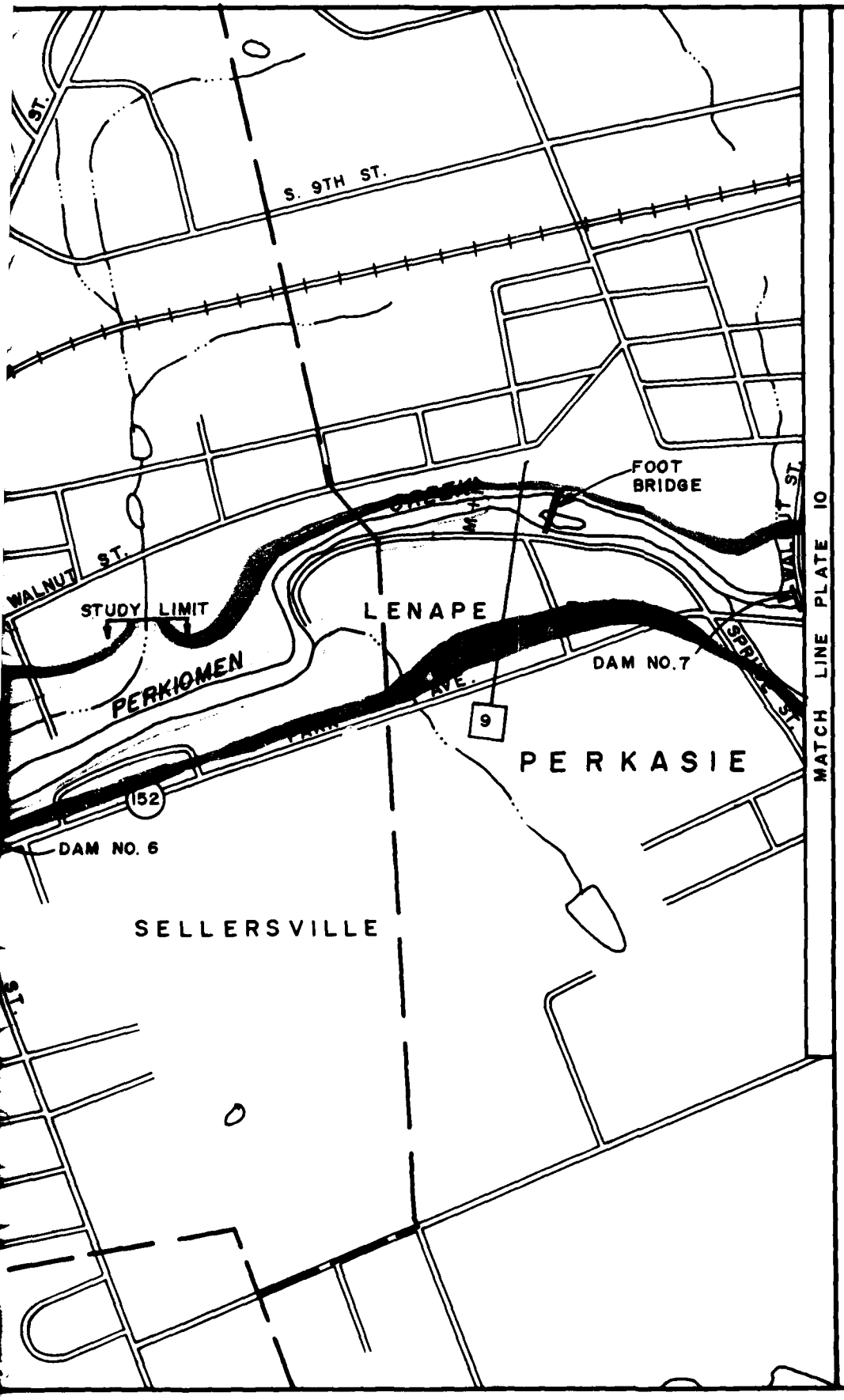
DEPARTMENT OF THE ARMY
PHILADELPHIA DISTRICT, CORPS OF ENGIN
PHILADELPHIA, PENNSYLVANIA

FLOOD PLAIN INFORMATION

EAST BRANCH PERKIOMEN CREEK
BUCKS & MONTGOMERY COUNTIES, P
FLOODED AREAS

2 PL


WEST
ROCKHILL
CAT HILL RD.
FARMERS LA.
MAPLE RD.
TEMPLE
EAST BRANCH
MILL CREEK
309
309
309 BY-PASS
DETWILERS RD.
CLYMER RD.
READING R.R.
PARK AVE.
STUDY LIMIT
SEWAGE DISPOSAL PLANT
DAM NO. 5
6
7
8
16
MATCH LINE PLATE 8



LEGEND

OVERFLOW LIMITS

INTERMEDIATE REGIONAL FLOOD — STANDARD PROJECT FLOOD

GROUND ELEVATION IN FEET (U.S.C. & G.S. 1929 ADJ.) SEA LEVEL DATUM

M+16 MILES ABOVE MOUTH

9 CROSS SECTION

TOWNSHIP OR BORO LIMITS

152 STATE ROUTE

NOTES

1. MAP BASED ON U.S.G.S. 7.5 MIN. QUADRANGLE SHEET: PERKIOMENVILLE, PA. 1969, TELFORD, PA. 1969, QUAKERTOWN, PA. 1969 & BEDMINSTER, PA. 1968. MINOR ADDITIONS AND ADJUSTMENTS MADE BY CORPS OF ENGINEERS.
2. LIMITS OF OVERFLOW SHOWN MAY VARY FROM ACTUAL LOCATION ON GROUND AS EXPLAINED IN THE REPORT.
3. AREAS OUTSIDE THE FLOOD PLAIN MAY BE SUBJECT TO FLOODING FROM LOCAL RUNOFF.
4. MINIMUM CONTOUR INTERVAL 20 FEET

SCALE IN FEET

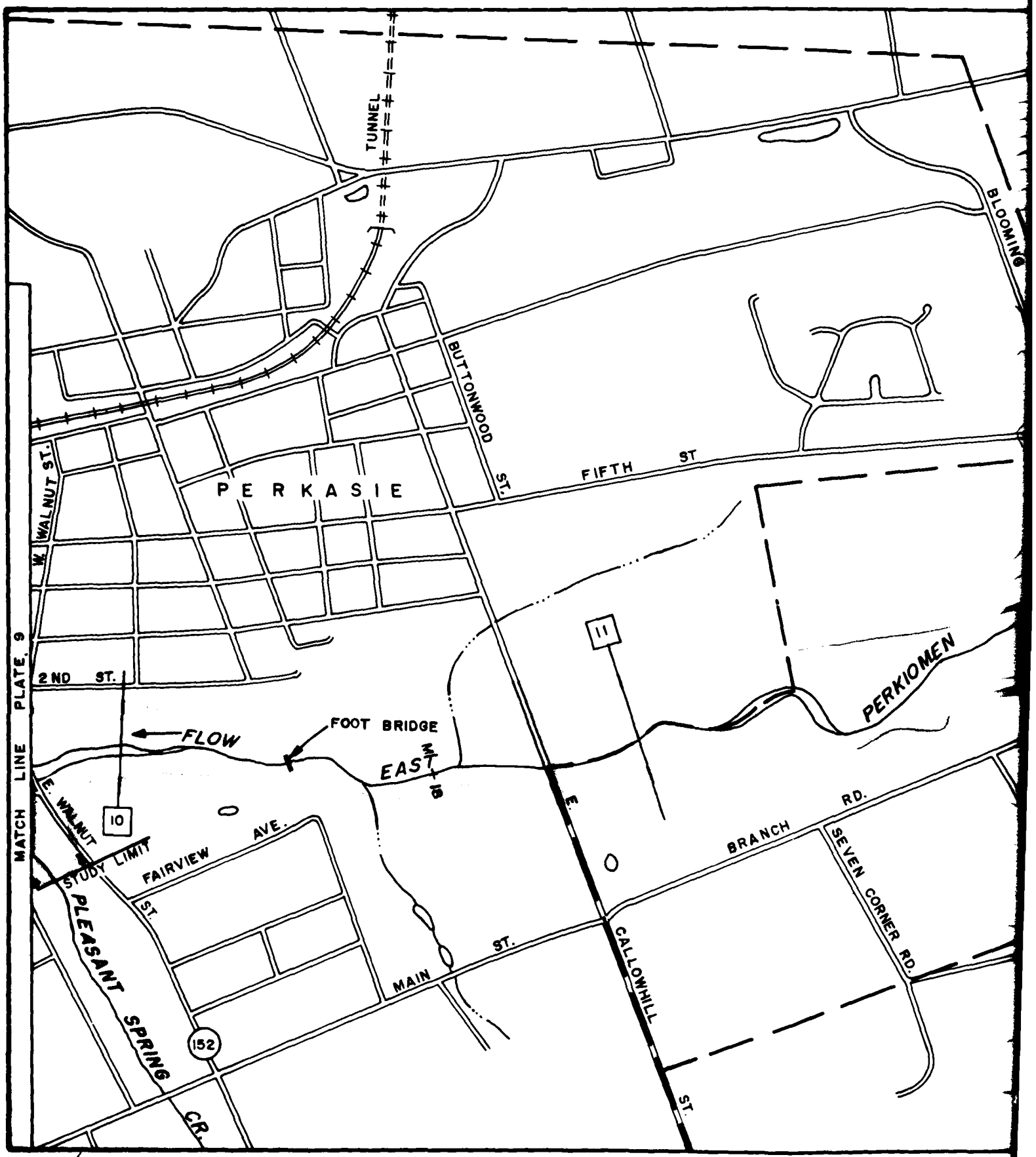
0 800 1600

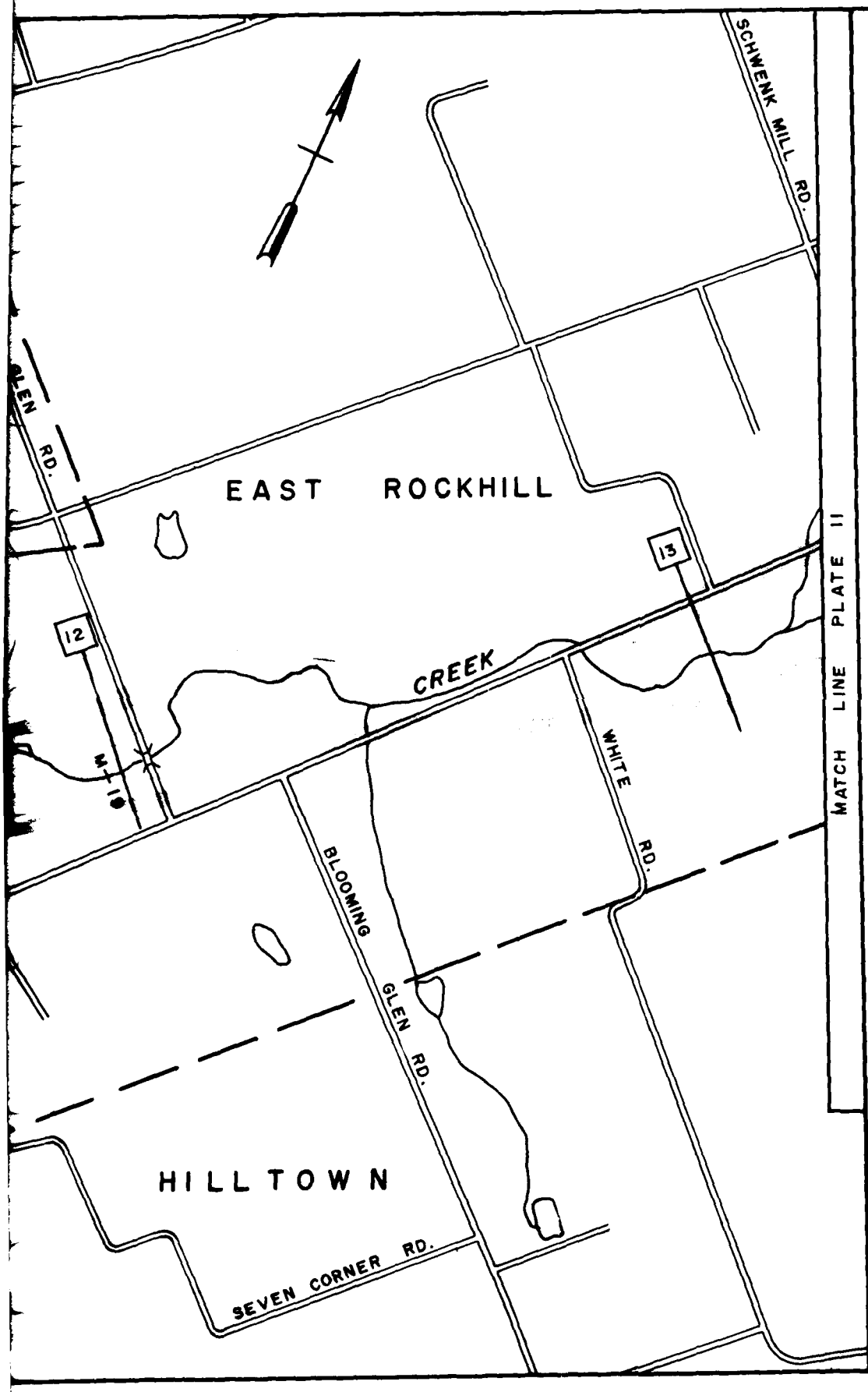
DEPARTMENT OF THE ARMY
PHILADELPHIA DISTRICT, CORPS OF ENGINEERS
PHILADELPHIA, PENNSYLVANIA

FLOOD PLAIN INFORMATION

EAST BRANCH PERKIOMEN CREEK
BUCKS & MONTGOMERY COUNTIES, PA
FLOODED AREAS

PLATE 9


TUNNEL
BLOOMING
BUTTONWOOD ST.
FIFTH ST
PERKASIE
W. WALNUT ST.
2ND ST.
MATCH LINE PLATE 9
FLOW
FOOT BRIDGE
EAST
PERKIOMEN
E. WALNUT
STUDY LIMIT
FAIRVIEW AVE.
ST.
PLEASANT SPRING CR.
MAIN ST.
CALLOWHILL ST.
E. BRANCH RD.
SEVEN CORNER RD.
10
11
152



LEGEND

OVERFLOW LIMITS

INTERMEDIATE REGIONAL FLOOD	STANDARD PROJECT FLOOD

GROUND ELEVATION IN FEET (U.S.C. & G.S. 1929 ADJ.) SEA LEVEL DATUM

M+18 MILES ABOVE MOUTH

13 CROSS SECTION

TOWNSHIP OR BORO LIMITS

152 STATE ROUTE

NOTES

1. MAP BASED ON U.S.G.S. 7.5 MIN. QUADS SHEET: PERKIOMENVILLE, PA. 1969. TEL PA. 1969, QUAKERTOWN, PA. 1969 & BEDMINSTER, PA. 1968 MINOR ADDITION ADJUSTMENTS MADE BY CORPS OF ENGINEE
2. LIMITS OF OVERFLOW SHOWN MAY VARY FR ACTUAL LOCATION ON GROUND AS EXPLAIN THE REPORT.
3. AREAS OUTSIDE THE FLOOD PLAIN MAY BE SUBJECT TO FLOODING FROM LOCAL RUNOF
4. MINIMUM CONTOUR INTERVAL 20 FEET

SCALE IN FEET

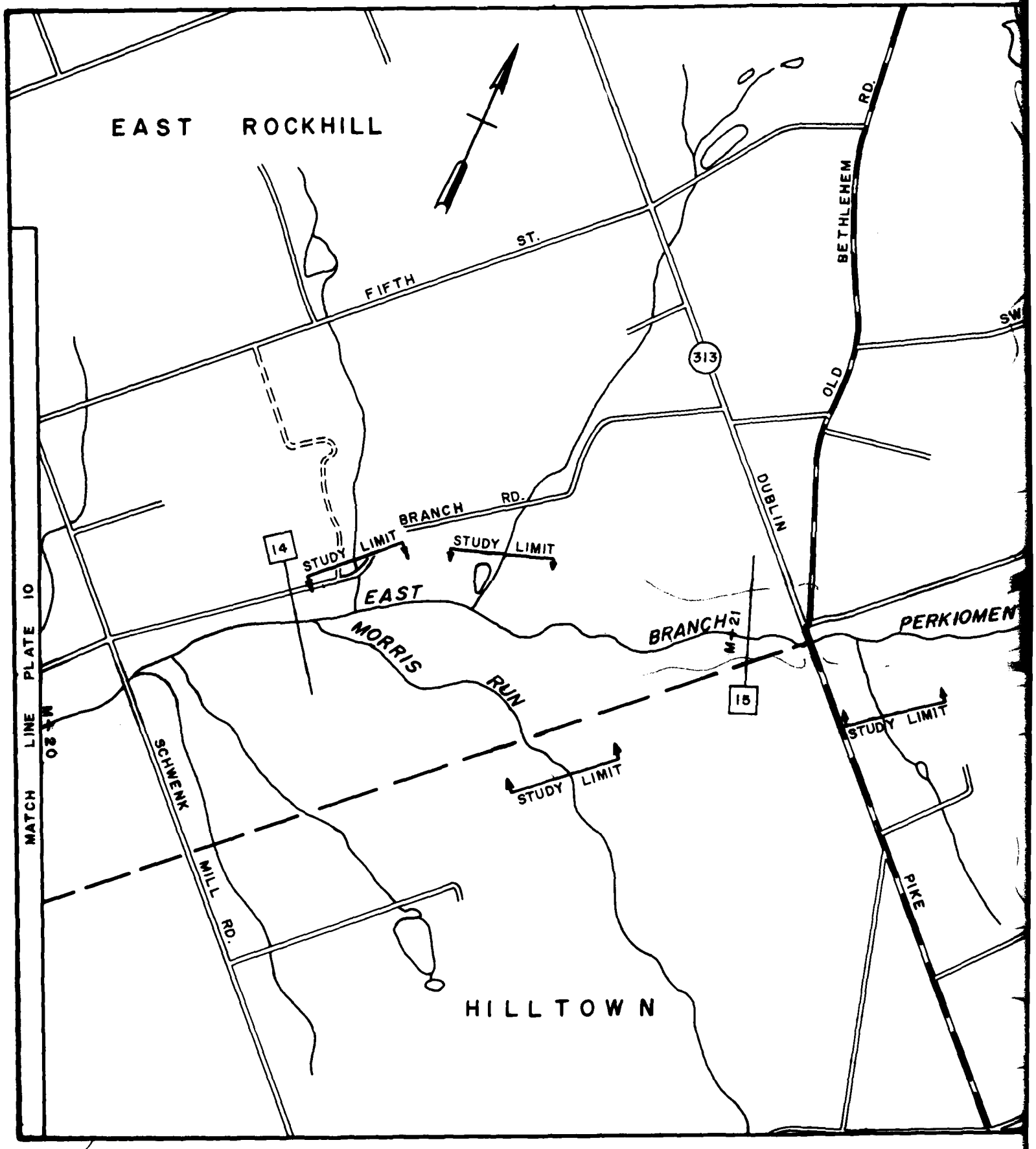
0 800 160

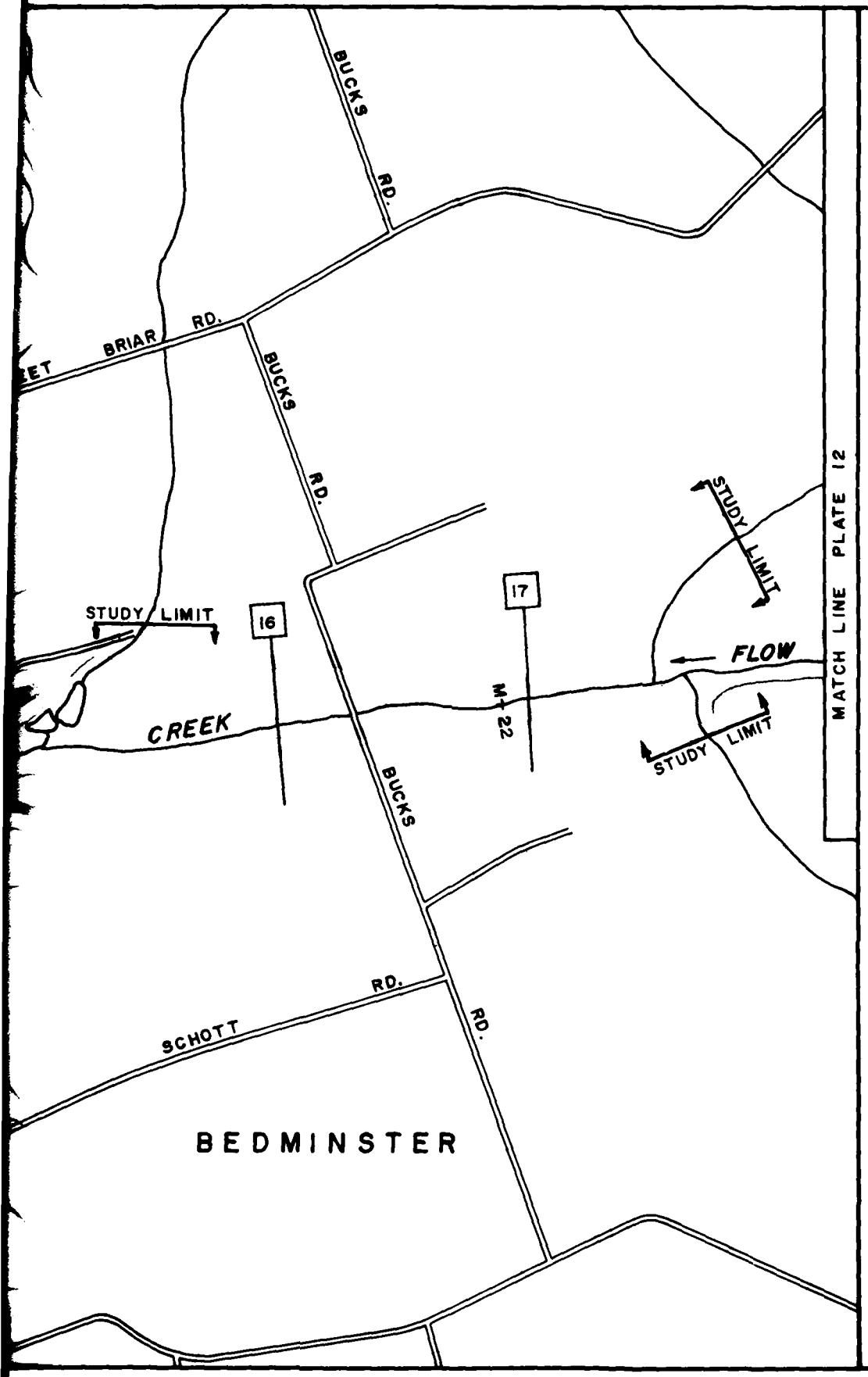
DEPARTMENT OF THE ARMY
PHILADELPHIA DISTRICT, CORPS OF ENGS
PHILADELPHIA, PENNSYLVANIA

FLOOD PLAIN INFORMATION

EAST BRANCH PERKIOMEN CREE
BUCKS & MONTGOMERY COUNTIES.
FLOODED AREAS

2 PLA


EAST ROCKHILL
FIFTH ST.
BETHLEHEM RD.
313
OLD
DUBLIN
BRANCH RD.
14
STUDY LIMIT
STUDY LIMIT
EAST
MORRIS
RUN
BRANCH
PERKIOMEN
M-21
15
STUDY LIMIT
STUDY LIMIT
M-20
SCHWENK MILL RD.
PIKE
HILLTOWN
MATCH LINE PLATE 10



LEGEND

OVERFLOW LIMITS

INTERMEDIATE REGIONAL FLOOD	STANDARD PROJECT FLOOD

GROUND ELEVATION IN FEET (U.S.C. & G.S. 1929 ADJ.) SEA LEVEL DATUM

M+22 MILES ABOVE MOUTH

17 CROSS SECTION

TOWNSHIP OR BORO LIMITS

313 STATE ROUTE

NOTES

1. MAP BASED ON U.S.G.S. 7.5 MIN. QUADRA SHEET: PERKIOMENVILLE, PA. 1969, TELF PA. 1969, QUAKERTOWN, PA. 1969 & BEDMINSTER, PA. 1968 MINOR ADDITIONS ADJUSTMENTS MADE BY CORPS OF ENGINEE
2. LIMITS OF OVERFLOW SHOWN MAY VARY FR ACTUAL LOCATION ON GROUND AS EXPLAIN THE REPORT.
3. AREAS OUTSIDE THE FLOOD PLAIN MAY BE SUBJECT TO FLOODING FROM LOCAL RU'OFF
4. MINIMUM CONTOUR INTERVAL 20 FEET

SCALE IN FEET

0 800 1600

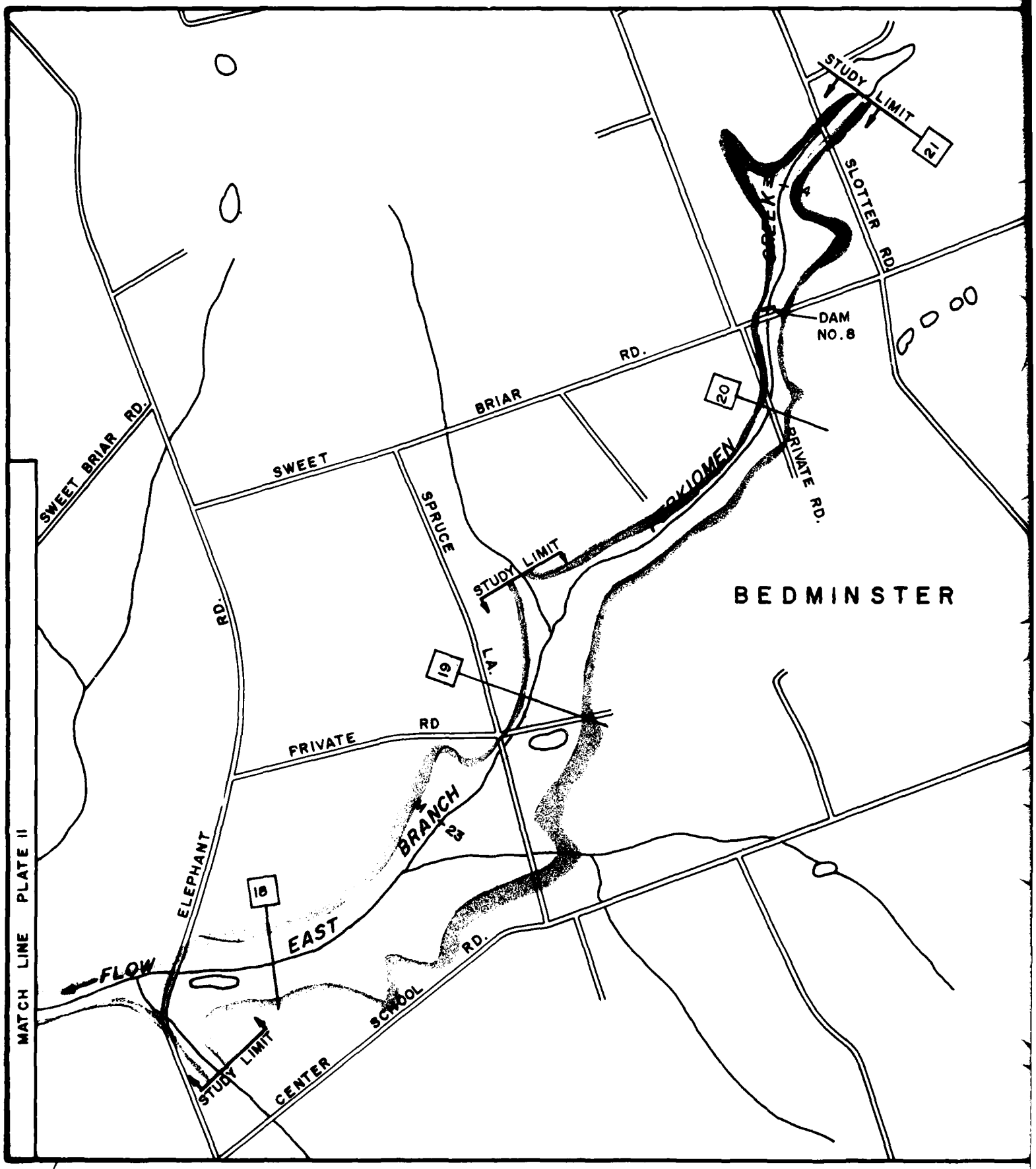
DEPARTMENT OF THE ARMY
PHILADELPHIA DISTRICT, CORPS OF ENGIN
PHILADELPHIA, PENNSYLVANIA

FLOOD PLAIN INFORMATION

EAST BRANCH PERKIOMEN CREEK
BUCKS & MONTGOMERY COUNTIES, P

FLOODED AREAS

PLA


STUDY LIMIT
21
SLOTTER RD.
DAM NO. 8
RD.
BRIAR
SWEET
SWEET BRIAR RD.
20
PRIVATE RD.
BEDMINSTER
SPRUCE
STUDY LIMIT
RD.
LA.
19
PRIVATE RD
BRANCH
23
ELEPHANT
18
EAST
FLOW
SCHOOL RD.
STUDY LIMIT
CENTER
MATCH LINE PLATE II

LEGEND

OVERFLOW LIMITS

INTERMEDIATE REGIONAL FLOOD	STANDARD PROJECT FLOOD

GROUND ELEVATION IN FEET (U.S.C. & G.S. 1929 ADJ.) SEA LEVEL DATUM

M+23 MILES ABOVE MOUTH

21 CROSS SECTION

TOWNSHIP OR BORO LIMITS

NOTES

1. MAP BASED ON U.S.G.S. 7.5 MIN. QUADR SHEET: PERKIOMENVILLE, PA. 1969, TEL PA. 1969, QUAKERTOWN, PA. 1969 & BEDMINSTER, PA. 1968 MINOR ADDITION ADJUSTMENTS MADE BY CORPS OF ENGINE
2. LIMITS OF OVERFLOW SHOWN MAY VARY FR ACTUAL LOCATION ON GROUND AS EXPLAI THE REPORT.
3. AREAS OUTSIDE THE FLOOD PLAIN MAY BE SUBJECT TO FLOODING FROM LOCAL RUNO
4. MINIMUM CONTOUR INTERVAL 20 FEET

SCALE IN FEET

0 800 1600

DEPARTMENT OF THE ARMY
PHILADELPHIA DISTRICT, CORPS OF ENGR
PHILADELPHIA, PENNSYLVANIA

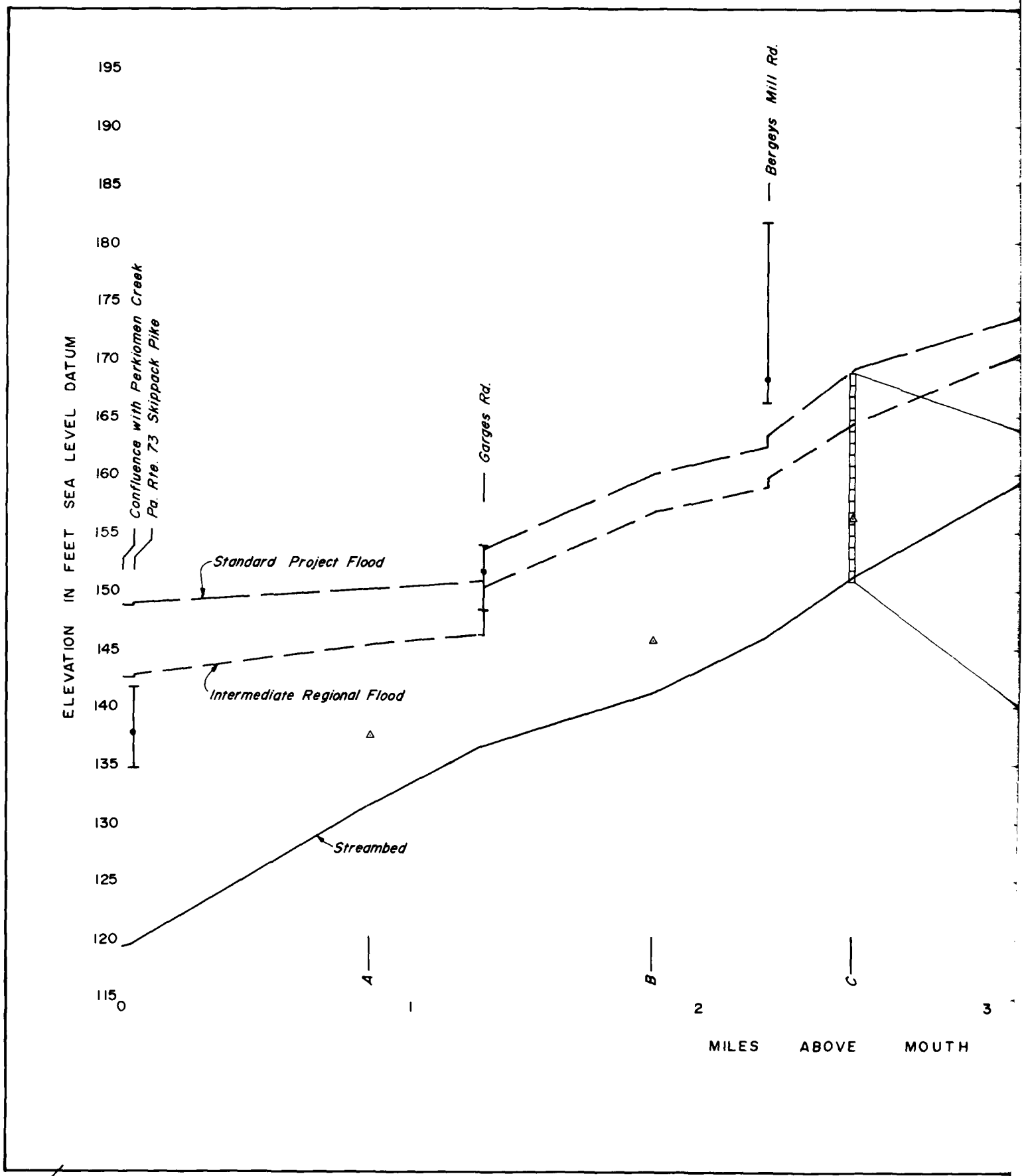
FLOOD PLAIN INFORMATION

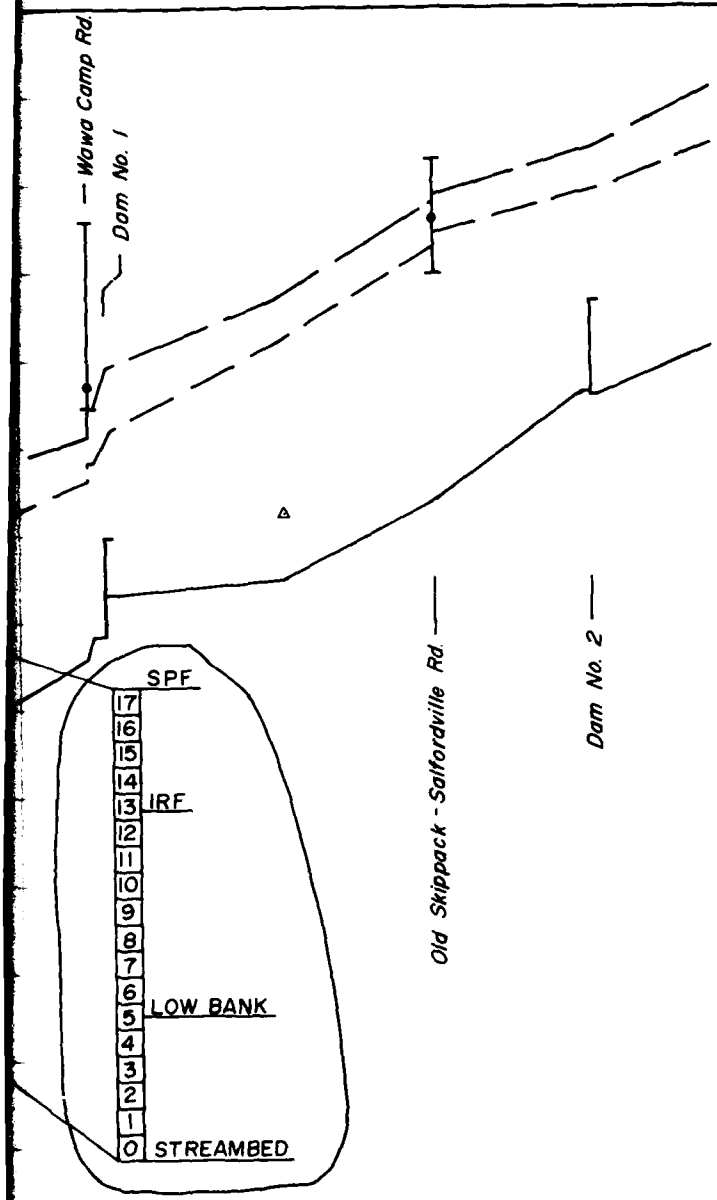
EAST BRANCH PERKIOMEN CREEK
BUCKS & MONTGOMERY COUNTIES.

FLOODED AREAS

2

PL


ELEVATION IN FEET SEA LEVEL DATUM
195
190
185
180
175
170
165
160
155
150
145
140
135
130
125
120
115
0
1
2
3
MILES ABOVE MOUTH
Confluence with Perkiomen Creek
Pa. Rte. 73 Skippack Pike
Gorges Rd.
Bergeys Mill Rd.
Standard Project Flood
Intermediate Regional Flood
Streambed
A
B
C



LEGEND

- Top of Bridge Railing
- Bridge Floor
- Underclearance
- C — Cross Section
- Top of Low Bank

NOTES:

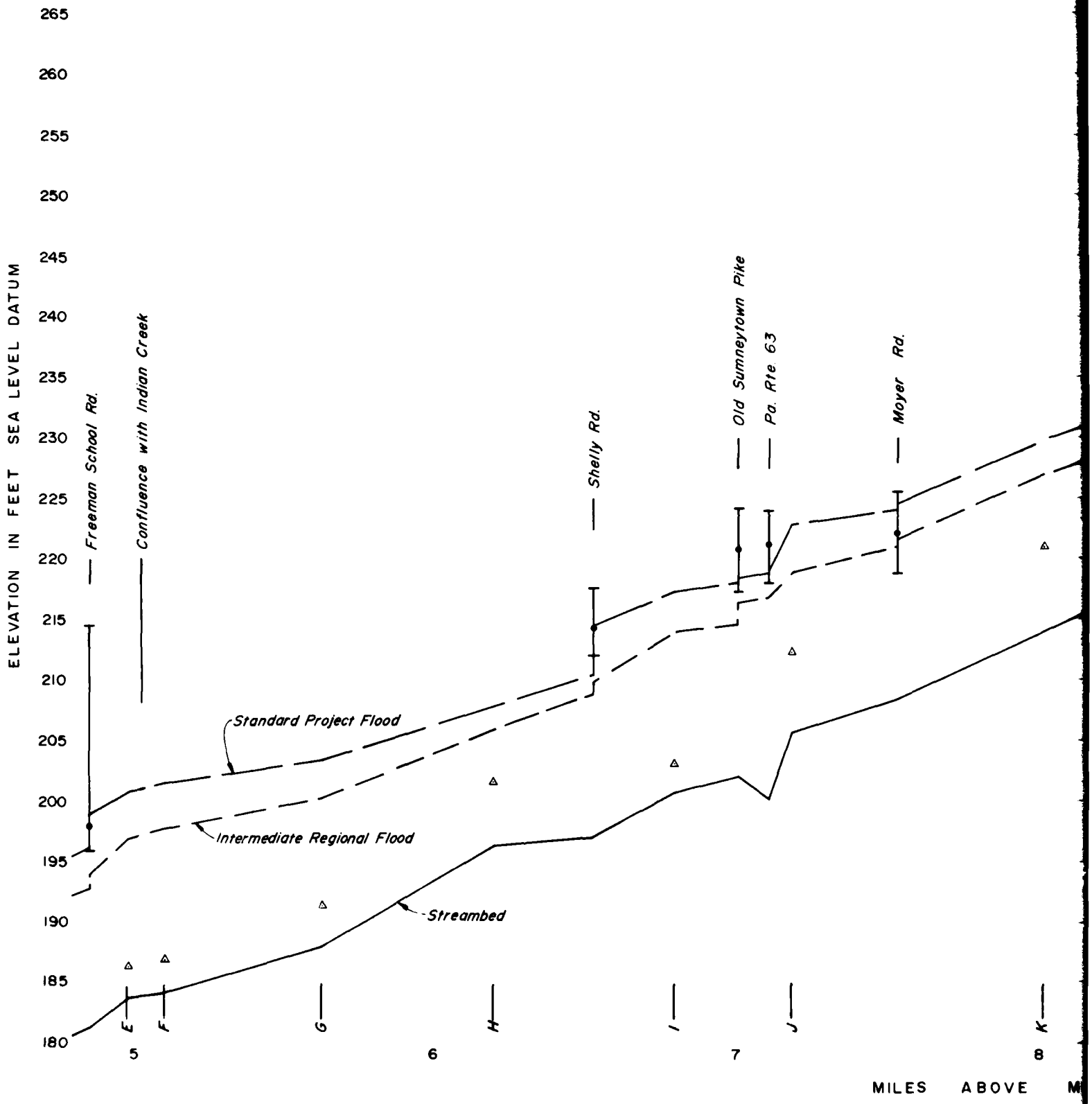
1. Cross sections A to Q were surveyed May - July 1973.
2. Cross sections 1 to 21 were surveyed November 1969.

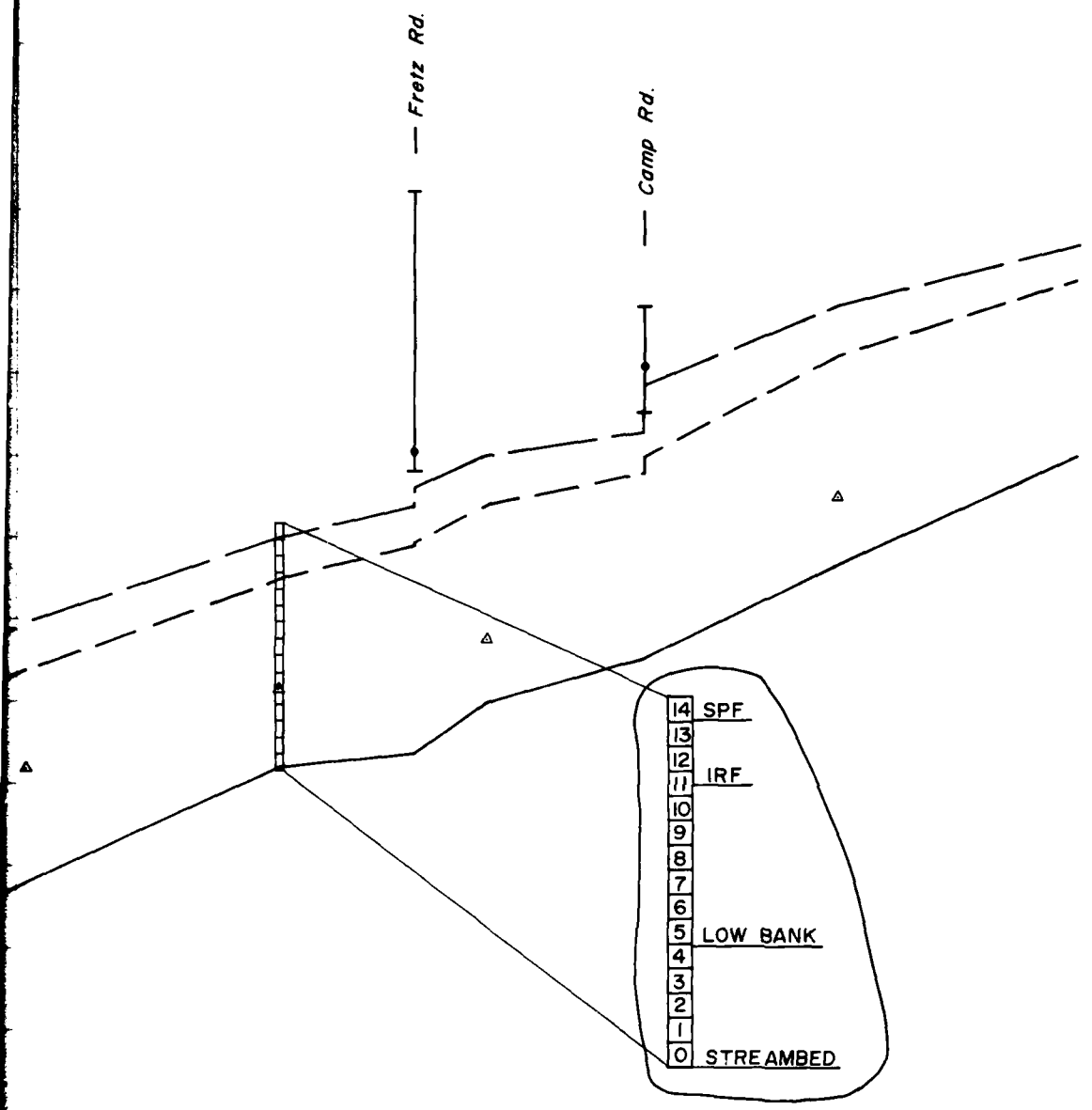
DEPARTMENT OF THE ARMY
PHILADELPHIA DISTRICT, CORPS OF EN
PHILADELPHIA, PENNSYLVANIA

FLOOD PLAIN INFORMATION
EAST BRANCH PERKIOMEN CR
BUCKS AND MONTGOMERY COUNTI

HIGH WATER PROFILES
EAST BRANCH PERKIOMEN CR

2 PL


ELEVATION IN FEET SEA LEVEL DATUM
265
260
255
250
245
240
235
230
225
220
215
210
205
200
195
190
185
180
Freeman School Rd.
Confluence with Indian Creek
Shelly Rd.
Old Sumneytown Pike
Pa. Rte. 63
Moyer Rd.
Standard Project Flood
Intermediate Regional Flood
Streambed
E
F
G
H
I
J
K
5
6
7
8
MILES ABOVE M



LEGEND

- Top of Bridge Railing
- Bridge Floor
- Underclearance
- K— Cross Section
- △ Top of Low Bank

For notes see Plate 13.

K — L — M — N —

8 9 10

MOUTH

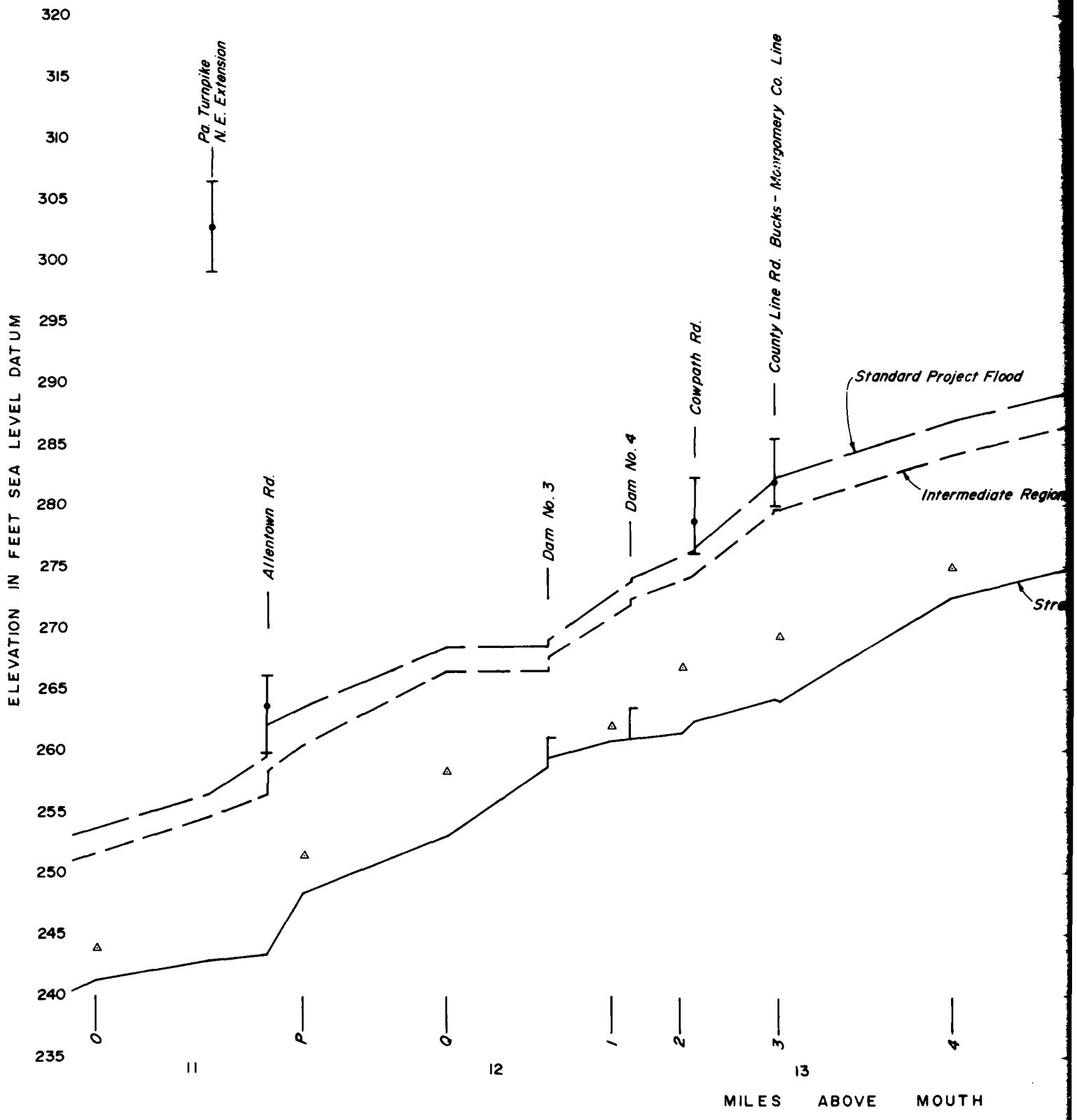
DEPARTMENT OF THE ARMY
PHILADELPHIA DISTRICT, CORPS OF EN
PHILADELPHIA, PENNSYLVANIA

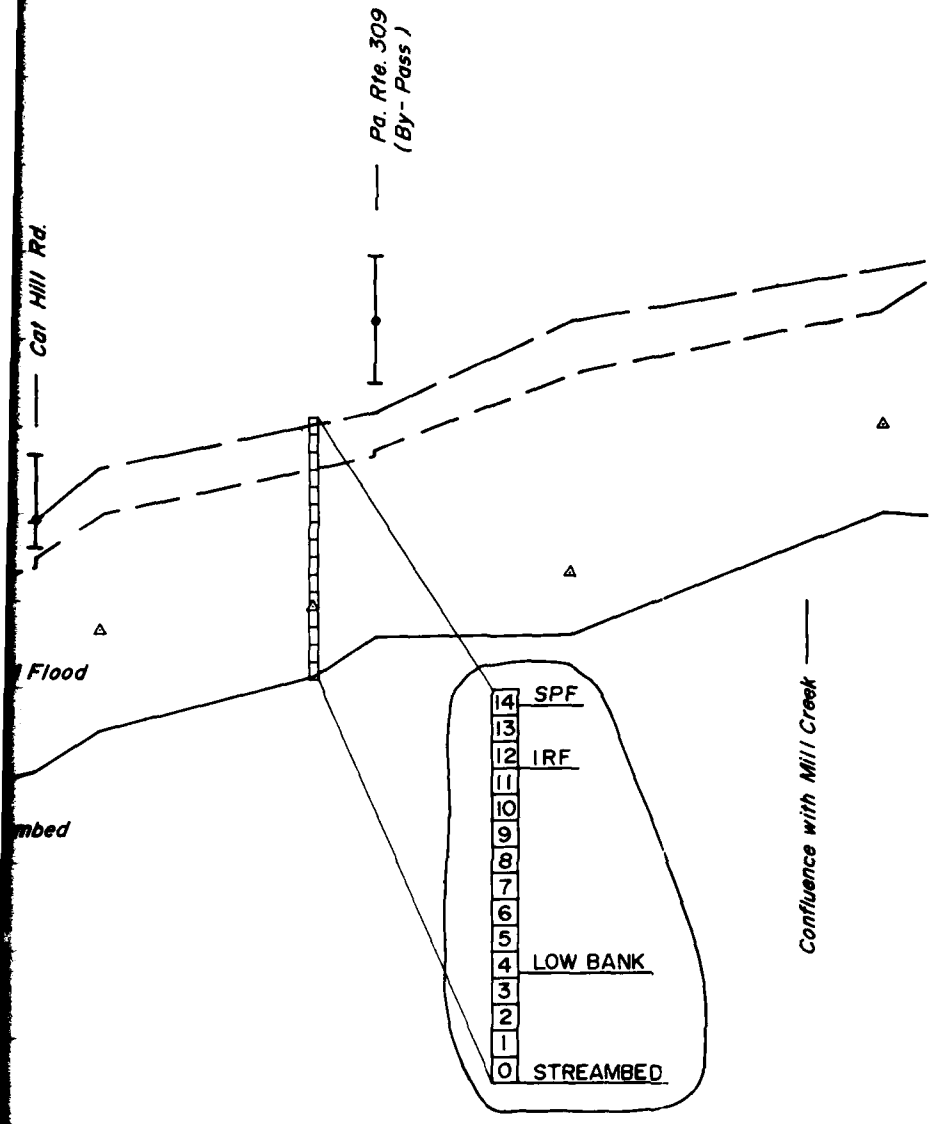
FLOOD PLAIN INFORMATION
EAST BRANCH PERKIOMEN CR
BUCKS AND MONTGOMERY COUNT

HIGH WATER PROFILES
EAST BRANCH PERKIOMEN CR

2

PL


ELEVATION IN FEET SEA LEVEL DATUM
320
315
310
305
300
295
290
285
280
275
270
265
260
255
250
245
240
235
Pa. Turnpike N.E. Extension
Allentown Rd.
Dam No. 3
Dam No. 4
Cowpath Rd.
County Line Rd. Bucks - Montgomery Co. Line
Standard Project Flood
Intermediate Region
Str
0
P
Q
1
2
3
4
11
12
13
MILES ABOVE MOUTH



LEGEND

- Top of Bridge Railing
- Bridge Floor
- Undercleqrance
- 6 — Cross Section
- △ Top of Low Bank

For notes see Plate 13.

5 6 7 8

14 15 16

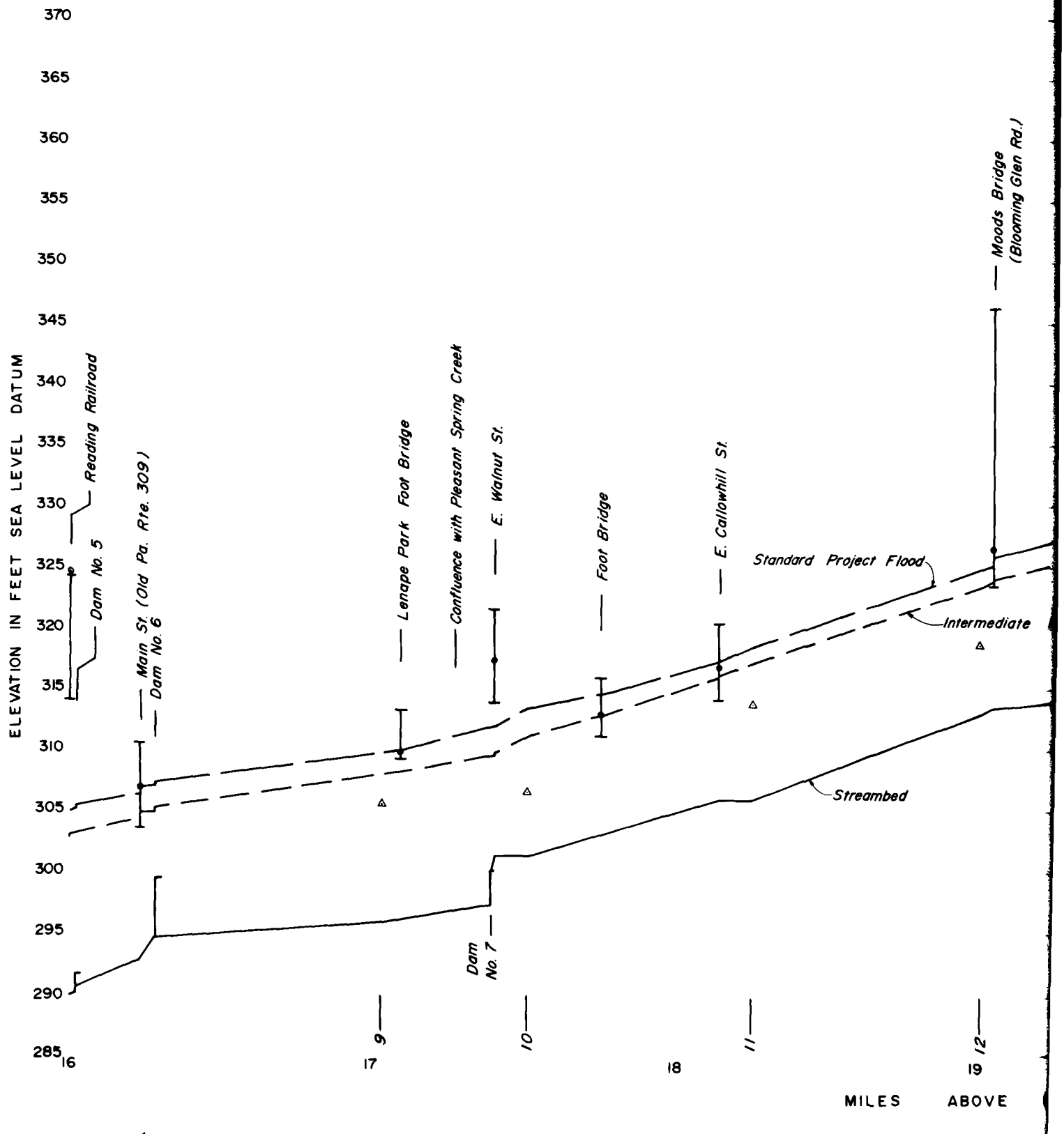
DEPARTMENT OF THE ARMY
PHILADELPHIA DISTRICT, CORPS OF ENGINEERS
PHILADELPHIA, PENNSYLVANIA

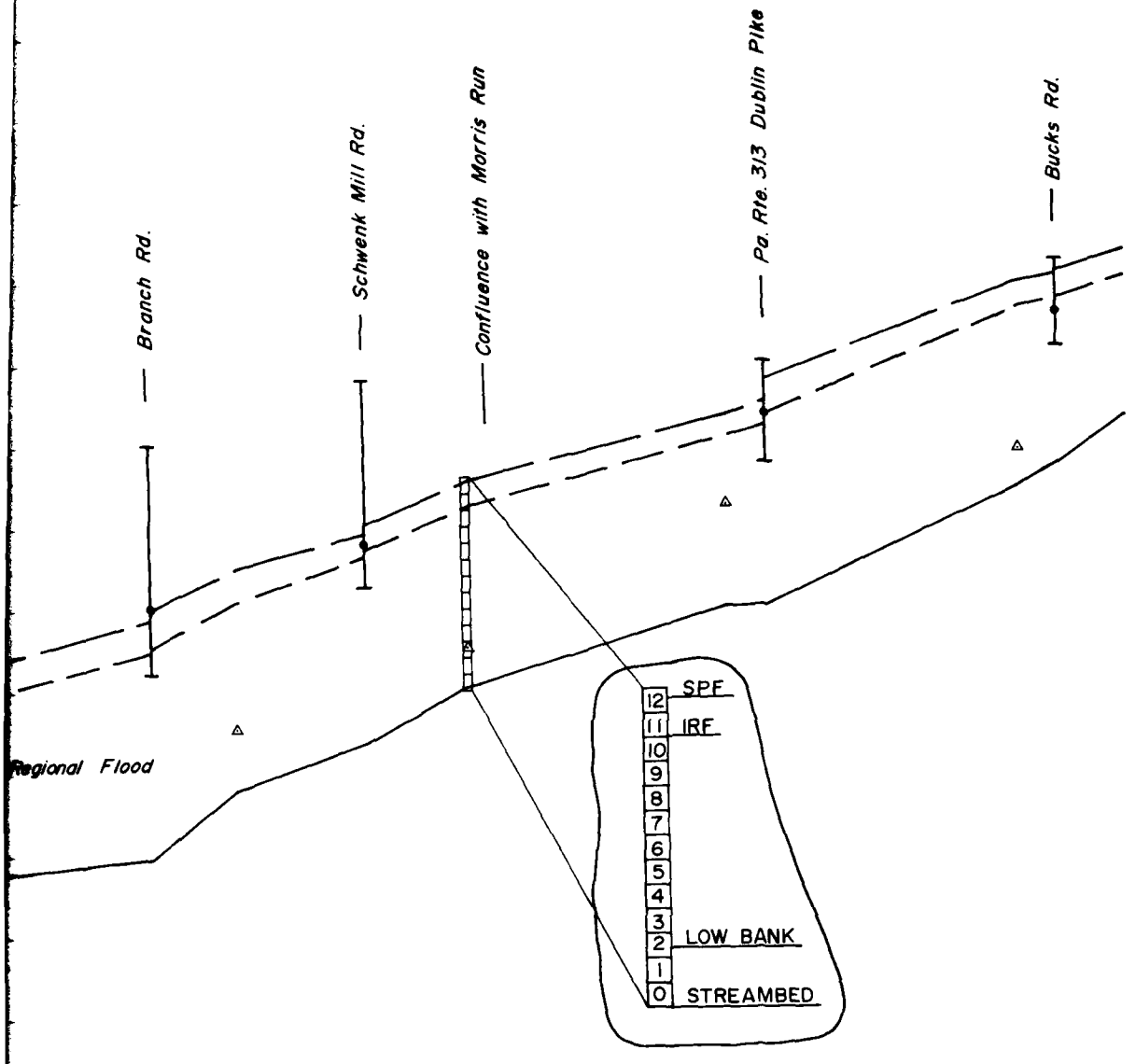
FLOOD PLAIN INFORMATION
EAST BRANCH PERKIOMEN CREEK
BUCKS AND MONTGOMERY COUNTIES,

HIGH WATER PROFILES
EAST BRANCH PERKIOMEN CREEK

2

PLATE


ELEVATION IN FEET SEA LEVEL DATUM
370
365
360
355
350
345
340
335
330
325
320
315
310
305
300
295
290
285
Reading Railroad
Dam No. 5
Main St. (Old Pa. Rte. 309)
Dam No. 6
Lenape Park Foot Bridge
Confluence with Pleasant Spring Creek
E. Walnut St.
Foot Bridge
E. Callowhill St.
Moods Bridge (Blooming Glen Rd.)
Standard Project Flood
Intermediate
Streambed
Dam No. 7
16
9
17
10
18
11
19
12
MILES ABOVE



LEGEND

- Top of Bridge Railing
- Bridge Floor
- Underclearance
- Top of Rail (Railroad Br
- 13— Cross Section
- △ Top of Low Bank

For notes see Plate 13

13 14 15 16

20 21 22

MOUTH

DEPARTMENT OF THE ARMY
PHILADELPHIA DISTRICT, CORPS OF EN
PHILADELPHIA, PENNSYLVANIA

FLOOD PLAIN INFORMATION
EAST BRANCH PERKIOMEN CR
BUCKS AND MONTGOMERY COUNTI

HIGH WATER PROFILES
EAST BRANCH PERKIOMEN CR

2

PLA

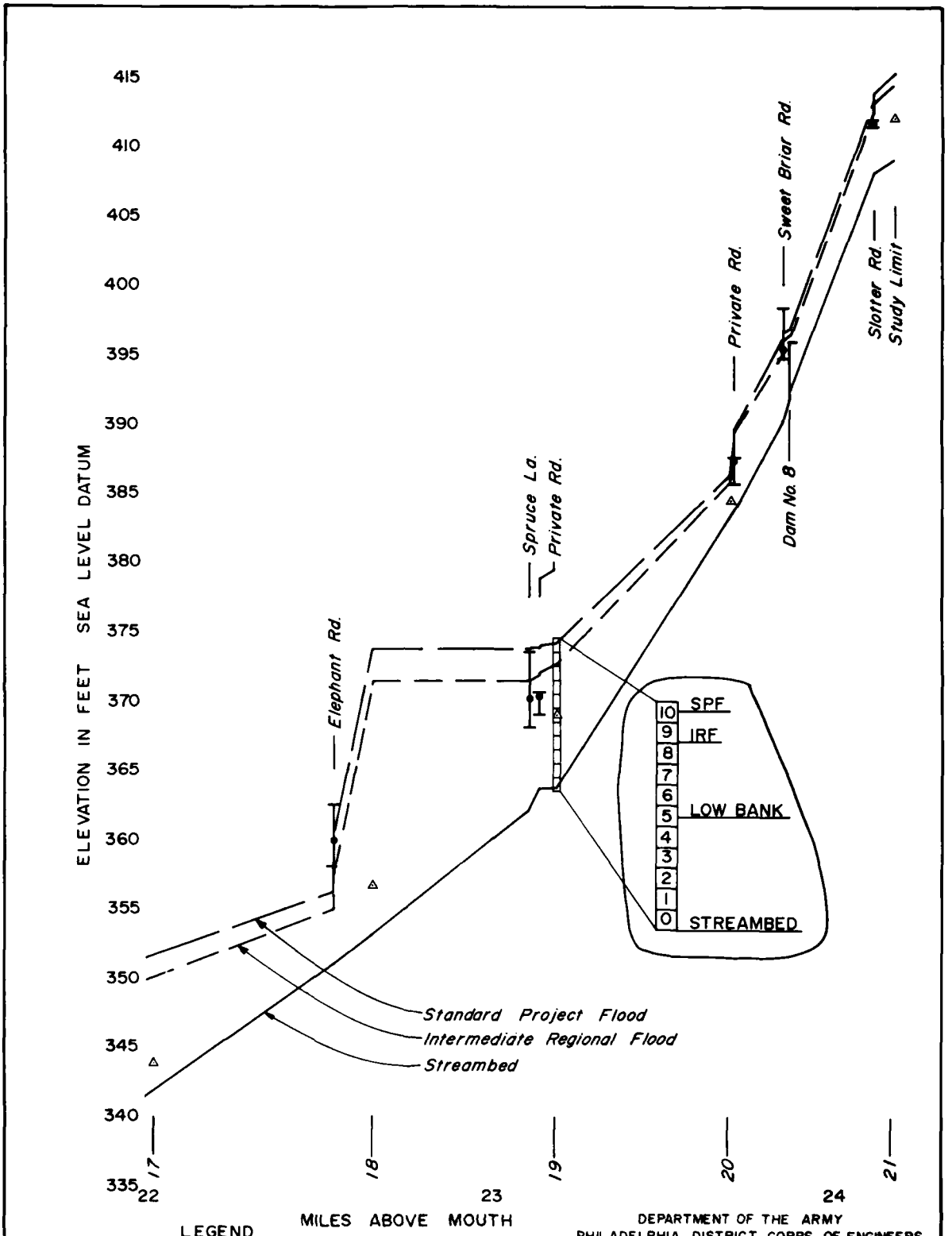
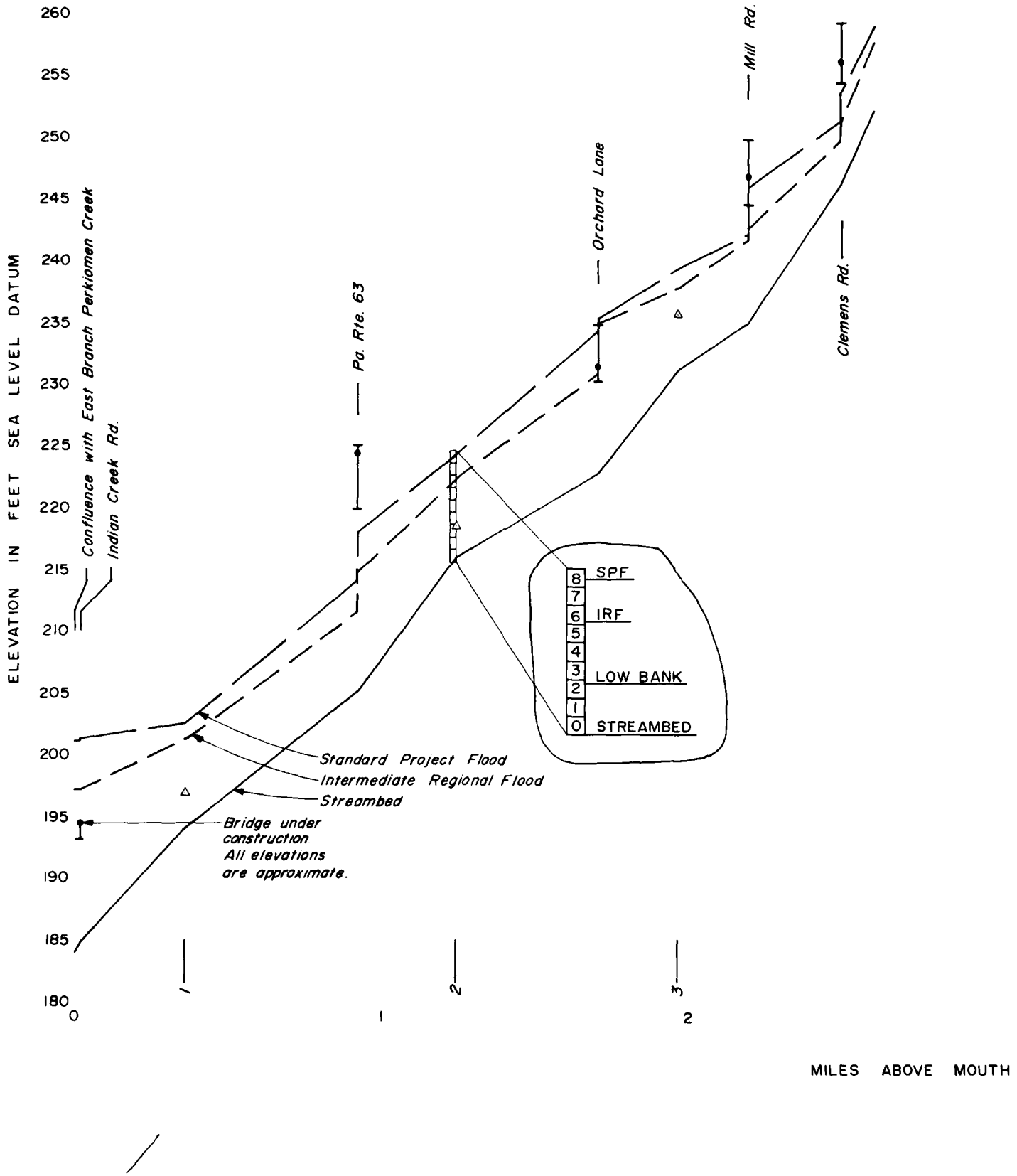
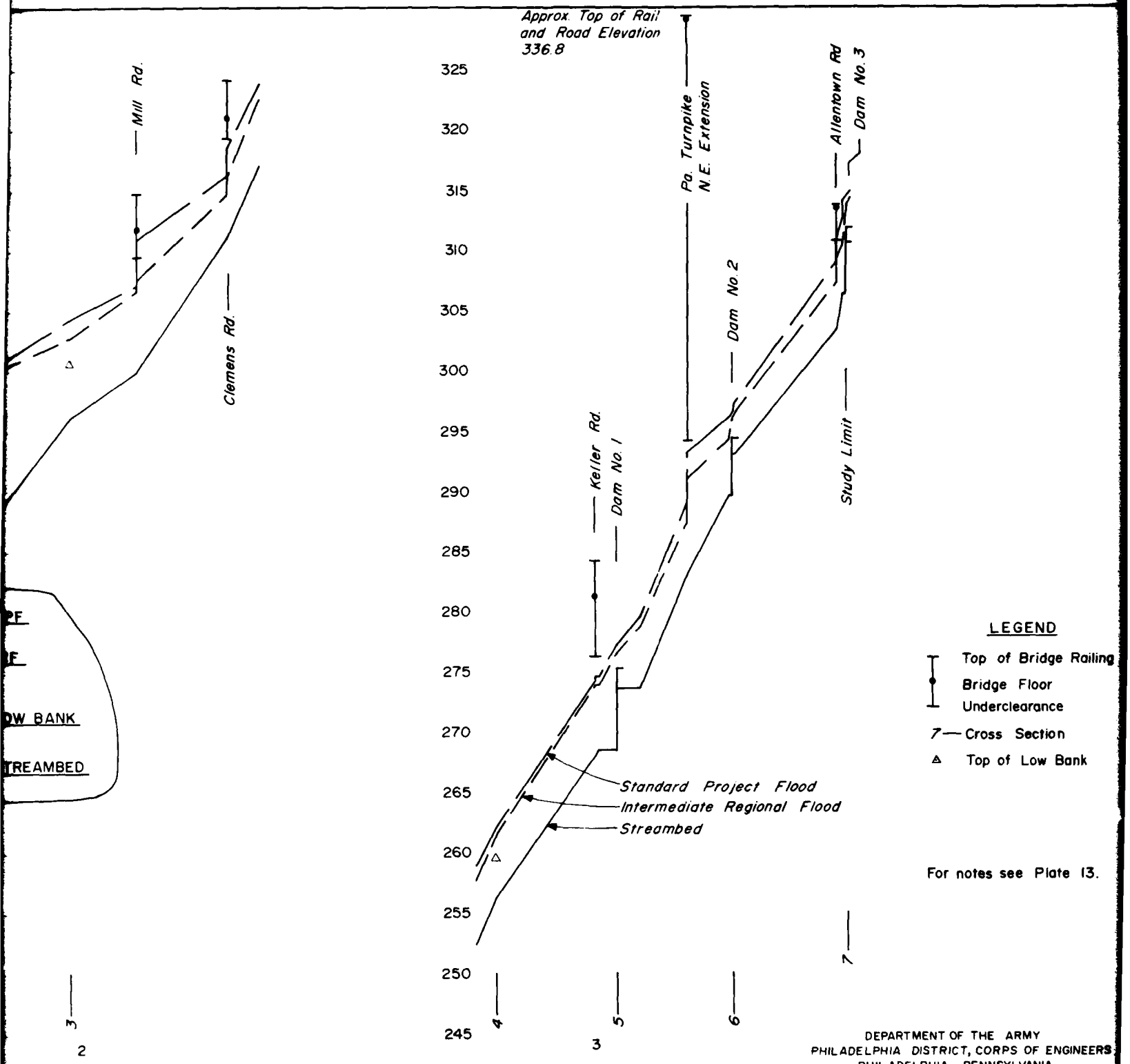

ELEVATION IN FEET SEA LEVEL DATUM
415
410
405
400
395
390
385
380
375
370
365
360
355
350
345
340
335
Elephant Rd.
Spruce La.
Private Rd.
Private Rd.
Dam No. 8
Sweet Briar Rd.
Slotter Rd.
Study Limit
SPF
IRF
LOW BANK
STREAMBED
10
9
8
7
6
5
4
3
2
1
0
Standard Project Flood
Intermediate Regional Flood
Streambed
17
18
19
20
21
22
23
24
MILES ABOVE MOUTH
LEGEND
Top of Bridge Railing
Bridge Floor
Undercleareance
17— Cross Section
For notes see Plate 13
DEPARTMENT OF THE ARMY
PHILADELPHIA DISTRICT, CORPS OF ENGINEERS
PHILADELPHIA, PENNSYLVANIA
FLOOD PLAIN INFORMATION
EAST BRANCH PERKIOMEN CREEK
BUCKS AND MONTGOMERY COUNTIES, PA.
HIGH WATER PROFILES
EAST BRANCH PERKIOMEN CREEK

PLATE 17


ELEVATION IN FEET SEA LEVEL DATUM
260
255
250
245
240
235
230
225
220
215
210
205
200
195
190
185
180
Confluence with East Branch Perkiomen Creek
Indian Creek Rd.
Pa. Rte. 63
Orchard Lane
Mill Rd.
Clemens Rd.
8 SPF
7
6 IRF
5
4
3 LOW BANK
2
1
0 STREAMBED
Standard Project Flood
Intermediate Regional Flood
Streambed
Bridge under construction. All elevations are approximate.
0
1
2
3
0
1
2
MILES ABOVE MOUTH



LEGEND

- Top of Bridge Railing
- Bridge Floor
- Underclearance
- 7 — Cross Section
- △ Top of Low Bank

For notes see Plate 13.

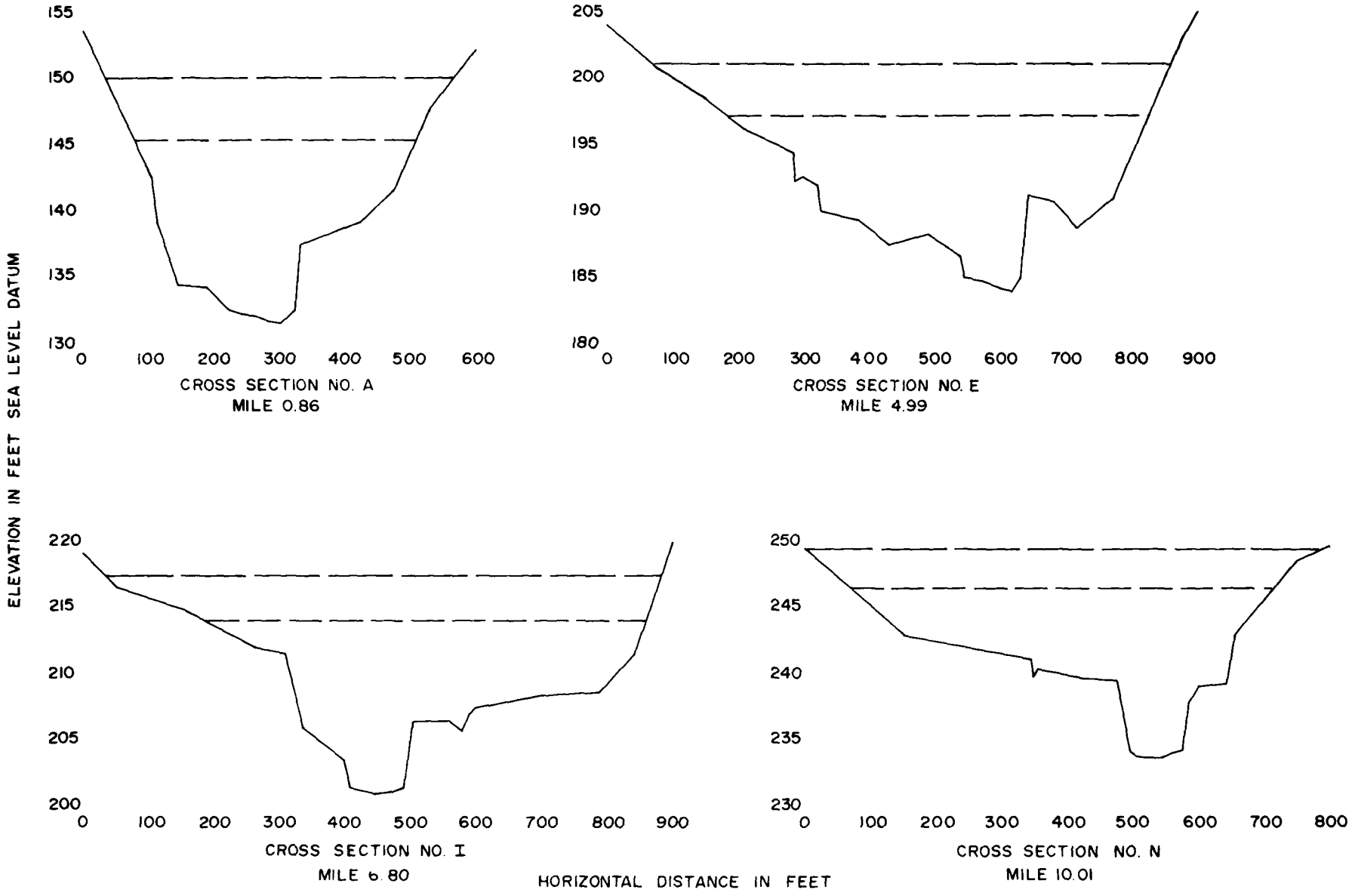
DEPARTMENT OF THE ARMY
PHILADELPHIA DISTRICT, CORPS OF ENGINEERS
PHILADELPHIA, PENNSYLVANIA

FLOOD PLAIN INFORMATION
EAST BRANCH PERKIOMEN CREEK
BUCKS AND MONTGOMERY COUNTIES, PA

HIGH WATER PROFILES
INDIAN CREEK

2

PLATE 12



LEGEND

——— ——— Standard Project Flood

— — — Intermediate Regional Flood

——— Ground Line

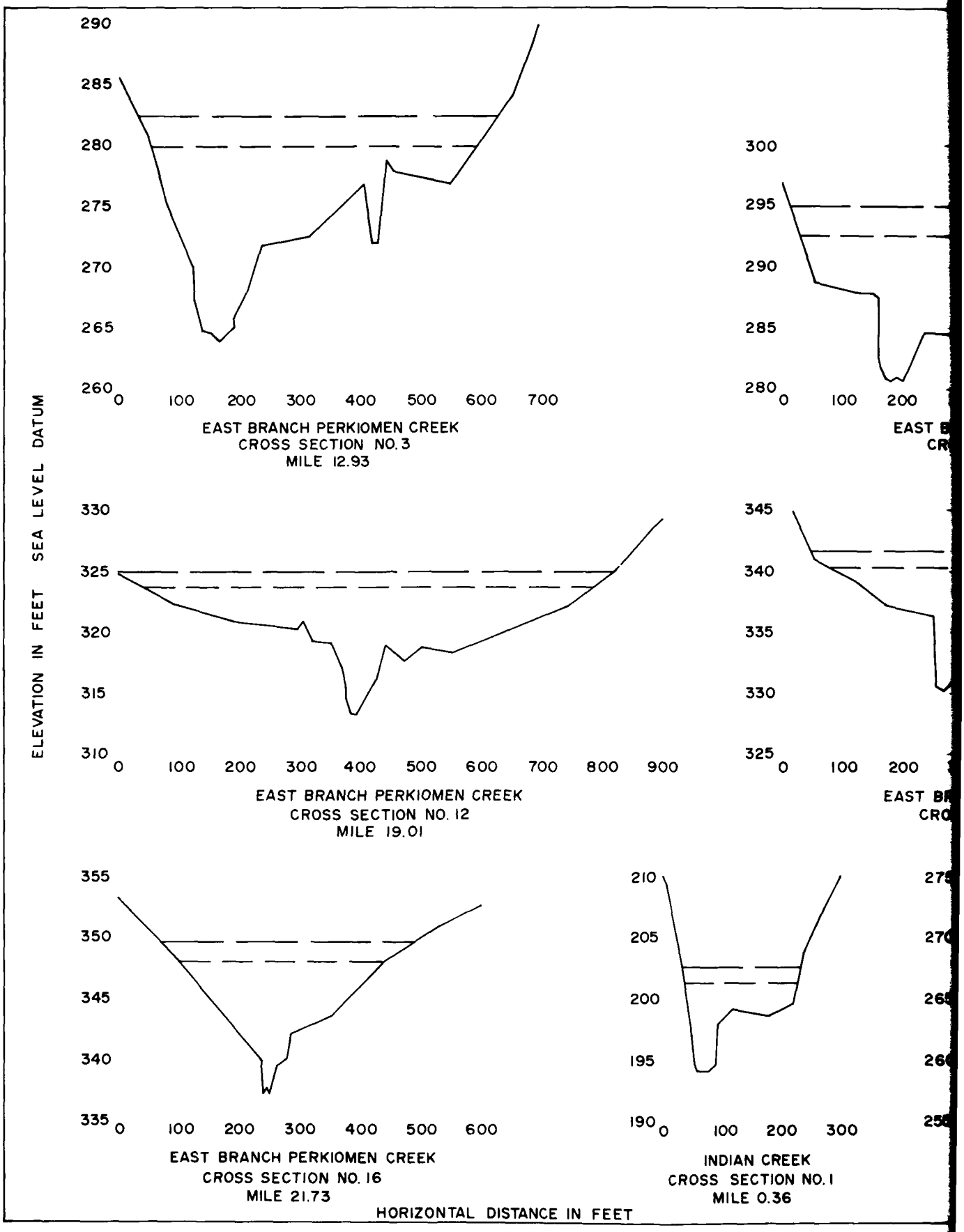
NOTES:

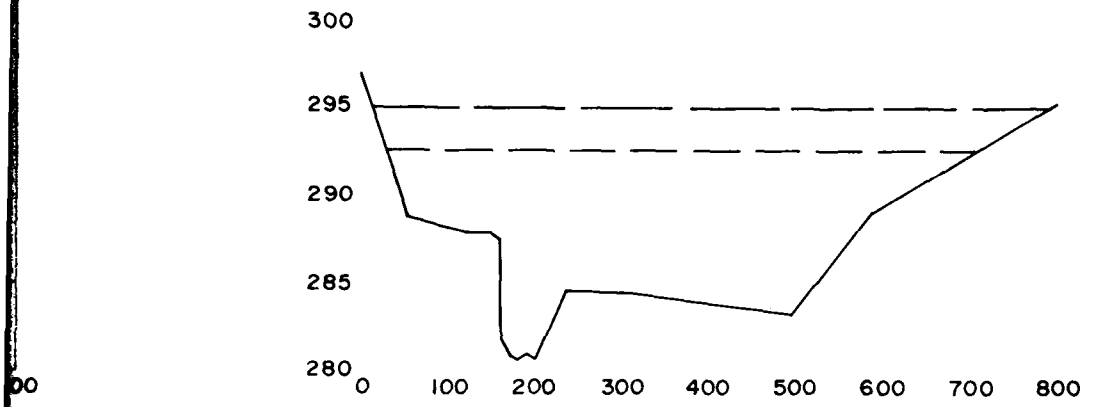
1. The 28 cross sections on East Branch Perkiomen Creek and Indian Creek not shown in this report are on file at the Philadelphia District, Corps of Engineers and are available for inspection upon request.
2. Cross sections taken looking downstream.
3. Cross sections A to Q were surveyed May - July 1973.
4. Cross sections 1 to 21 were surveyed November 1969.

DEPARTMENT OF THE ARMY
PHILADELPHIA DISTRICT, CORPS OF ENGINEERS
PHILADELPHIA, PENNSYLVANIA

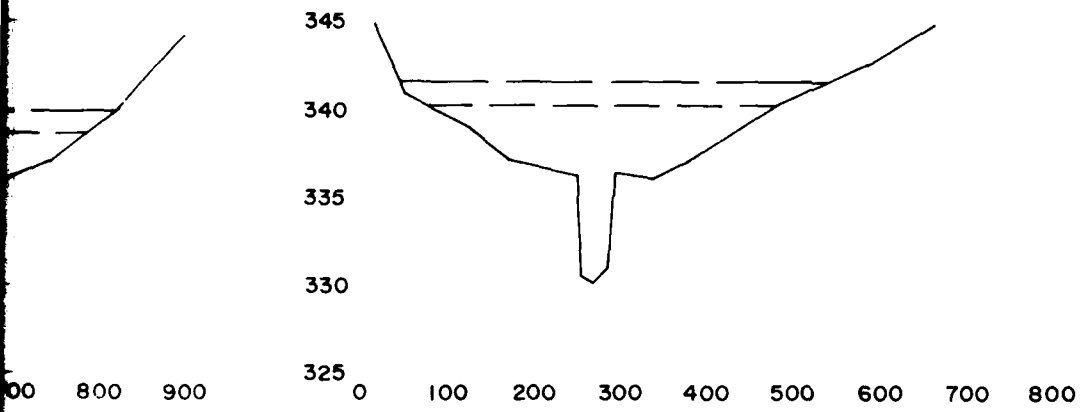
FLOOD PLAIN INFORMATION
EAST BRANCH PERKIOMEN CREEK
BUCKS AND MONTGOMERY COUNTIES, PA.

SELECTED CROSS SECTIONS
EAST BRANCH PERKIOMEN CREEK

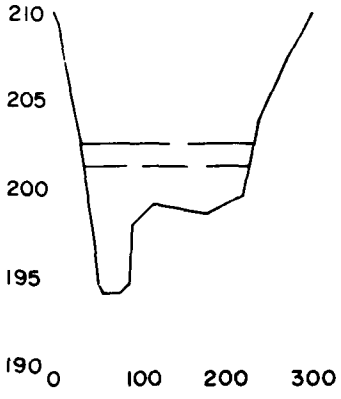

ELEVATION IN FEET SEA LEVEL DATUM
290
285
280
275
270
265
260
0 100 200 300 400 500 600 700
EAST BRANCH PERKIOMEN CREEK
CROSS SECTION NO. 3
MILE 12.93
300
295
290
285
280
0 100 200
330
325
320
315
310
0 100 200 300 400 500 600 700 800 900
EAST BRANCH PERKIOMEN CREEK
CROSS SECTION NO. 12
MILE 19.01
345
340
335
330
325
0 100 200
355
350
345
340
335
0 100 200 300 400 500 600
EAST BRANCH PERKIOMEN CREEK
CROSS SECTION NO. 16
MILE 21.73
210
205
200
195
190
0 100 200 300
INDIAN CREEK
CROSS SECTION NO. 1
MILE 0.36
HORIZONTAL DISTANCE IN FEET



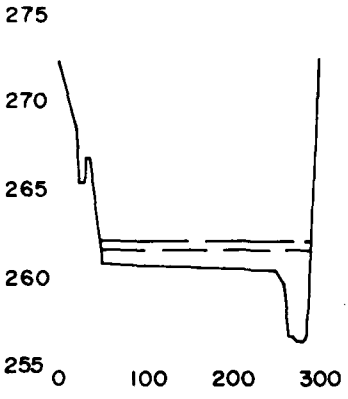
EAST BRANCH PERKIOMEN CREEK
CROSS SECTION NO. 6
MILE 14.59



EAST BRANCH PERKIOMEN CREEK
CROSS SECTION NO. 15
MILE 21.01



INDIAN CREEK
CROSS SECTION NO. 1
MILE 0.36



INDIAN CREEK
CROSS SECTION NO. 4
MILE 2.67

LEGEND

Standard Project Flood

Intermediate Regional Flood

Ground Line

For notes see Plate 19.

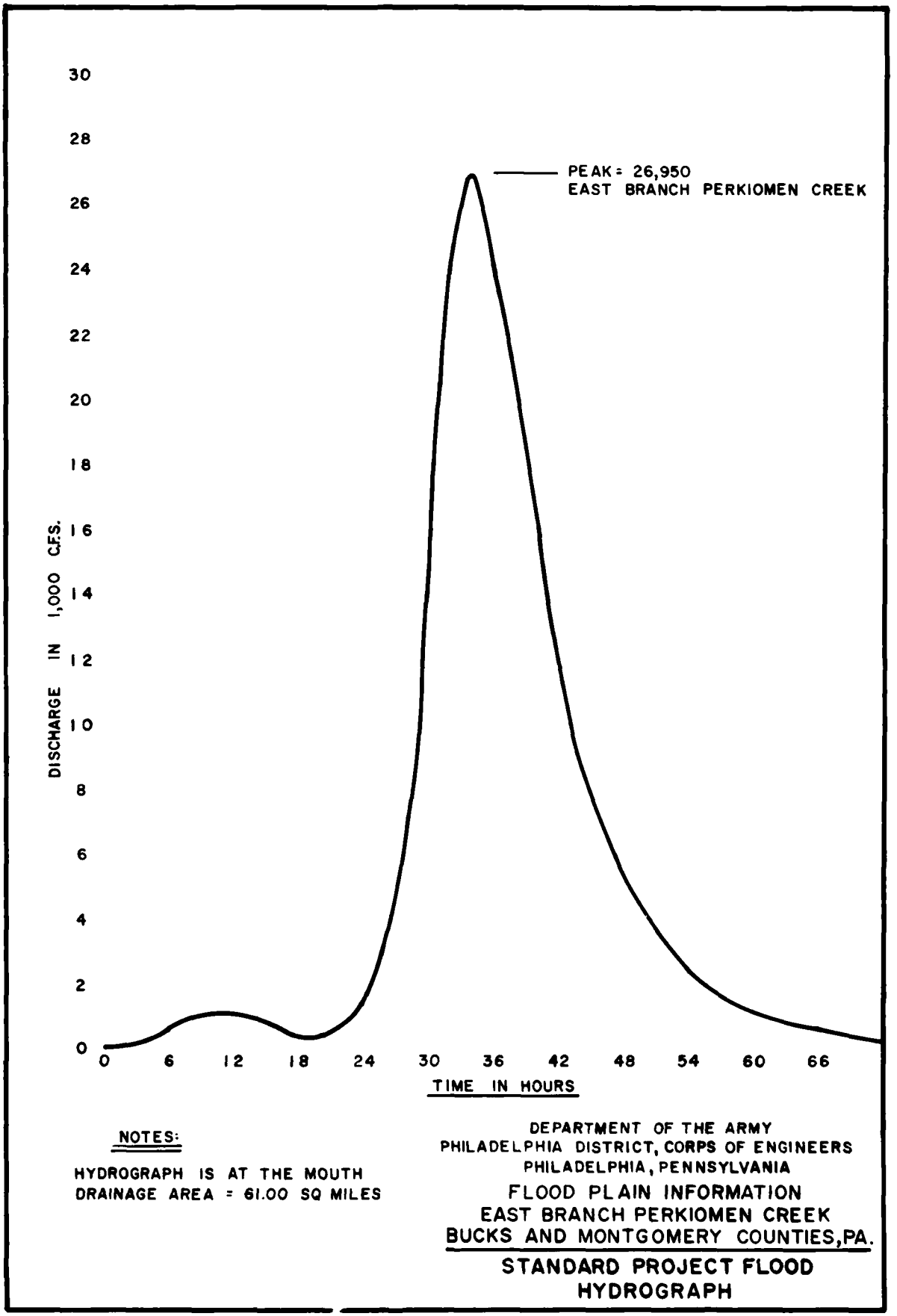
DEPARTMENT OF THE ARMY
PHILADELPHIA DISTRICT, CORPS OF ENGINEERS
PHILADELPHIA, PENNSYLVANIA

FLOOD PLAIN INFORMATION
EAST BRANCH PERKIOMEN CREEK
BUCKS AND MONTGOMERY COUNTIES, PA

SELECTED CROSS SECTIONS
EAST BRANCH PERKIOMEN CREEK
AND INDIAN CREEK

CE IN FEET

PLATE



NOTES:

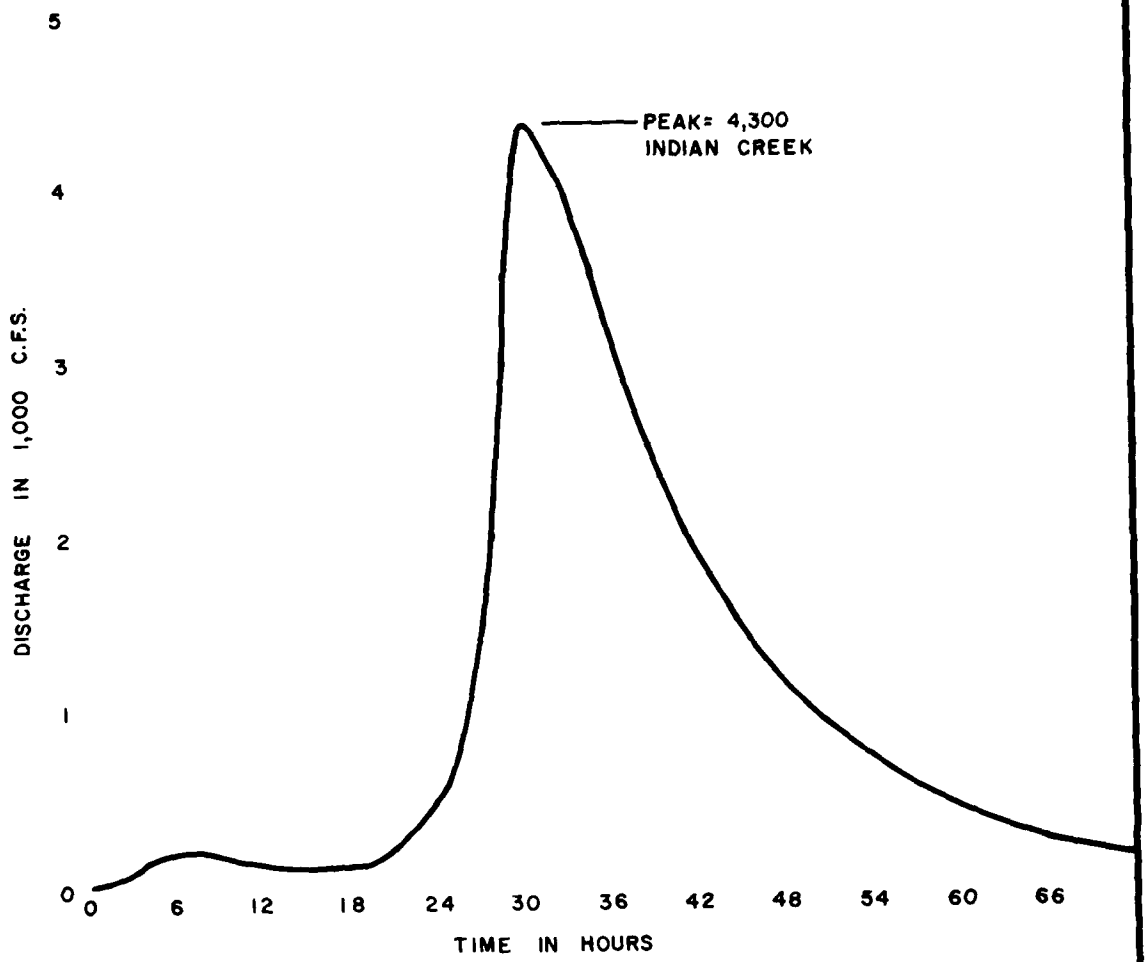
HYDROGRAPH IS AT THE MOUTH
DRAINAGE AREA = 61.00 SQ MILES

DEPARTMENT OF THE ARMY
PHILADELPHIA DISTRICT, CORPS OF ENGINEERS
PHILADELPHIA, PENNSYLVANIA

FLOOD PLAIN INFORMATION
EAST BRANCH PERKIOMEN CREEK
BUCKS AND MONTGOMERY COUNTIES, PA.

STANDARD PROJECT FLOOD
HYDROGRAPH

PLATE 21



NOTES:

HYDROGRAPH IS AT THE MOUTH
DRAINAGE AREA = 7.01 SQ. MILES

DEPARTMENT OF THE ARMY
PHILADELPHIA DISTRICT, CORPS OF ENGINEERS
PHILADELPHIA, PENNSYLVANIA

FLOOD PLAIN INFORMATION
EAST BRANCH PERKIOMEN CREEK
BUCKS AND MONTGOMERY COUNTIES, PA.

STANDARD PROJECT FLOOD
HYDROGRAPH

PLATE 22


DAT
FILM